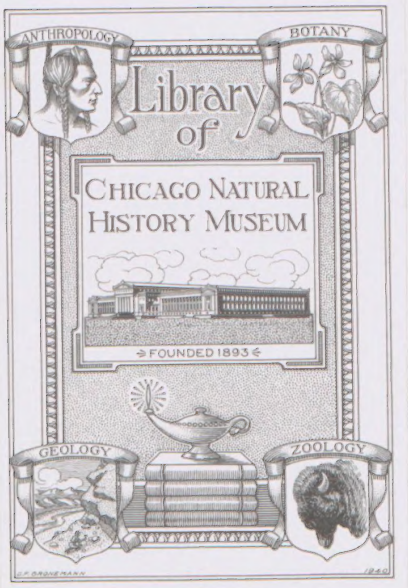
ANTHROPOLOGY
BOTANY
Library
of
CHICAGO NATURAL
HISTORY MUSEUM
FOUNDED 1893
GEOLOGY
ZOOLOGY

Bd. Gard

Catalog Guide
To

GARFIELD PARK CONSERVATORY

WEST CHICAGO
PARK COMMISSIONERS

1924

Children's Guide

to

GARFIELD PARK CONSERVATORY

WEST CHICAGO
PARK COMMISSIONERS

1924

69-3

CATALOG GUIDE

TO

Garfield Park Conservatory

WEST CHICAGO PARK COMMISSIONERS

John Dill Robertson, M. D., President

500

QK
73
.G24
W24

HON. LEN SMALL

GOVERNOR OF ILLINOIS

234010

FEB - 8 1996 GIFT (pre 1987)

West Chicago Park Commissioners

Mrs May H De Money

Joseph Siman

Sol Westerfeld

John Dill Robertson
President

Edwin T Farrar

Rudolph Mulac

Joseph Mersot

Officers

James J. McComb, *Secretary*
Louis S. Wilk, *Assistant Secretary*

Officers

Wm. G. Barclay, *Superintendent*
August Koch, *Chief Florist*

Wm. J. Short, *Superintendent of Employment*

The Fern House.

Foreword

THE West Park Commissioners have felt for some time that while the beauty of Garfield Park Conservatory is widely appreciated, the educational facilities of the Conservatory are comparatively unappreciated. In an attempt to remedy this condition and to render the great educational resources of the institution more readily available to the general public, the Commissioners have authorized the compilation of this Catalog-Guide.

There is, I understand, no larger collection of exotic plants housed under glass anywhere in the United States than the collection in Garfield Park Conservatory. The only rival collections are those of the New York and the Missouri Botanical Gardens. The outdoor plantings in the parks under the jurisdiction of this Board include practically all species of trees, shrubs, perennials, and annuals that can be grown outdoors in this climate. The total number of species and varieties grown outdoors and under glass, equals, I am told, any collection in the United States. The West Park Commissioners are desirous that the people of Illinois should realize what a valuable and unusual educational institution has been built up in their midst.

It would, of course, be of interest to the specialist and the scientist if we should issue a complete list of the species in our collection, along with information concerning the botanical characteristics and the morphology of the various species. Such a publication, however, would be of interest to but a small part of the people who visit the Conservatory. We have felt it more in keeping with the duties and responsibilities of such a body as the West Park Board to issue a publication for the general public, written in terms the layman can readily understand, and giving the sort of information in which the general public is most likely to be interested.

The species described are arranged alphabetically, for each room of the Conservatory, according to their Latin names. The use of the Latin name for this purpose is unavoidable. Common names vary greatly from one country to another, and would be most confusing to A populace drawn from as many different parts of the world as is ours. at least a dozen different plants, for example, are known in different parts of the world as India-rubber plants; hence the name "India-rubber plant" signifies a different species to people from different countries or from different sections of the same country. The names *Ficus elastica, Hevea brasiliensis,* and *Manihot Glaziovii,* however, are standard the world over—they signify the same species to a native of India, China, Egypt, Natal, France, Sweden, or the United States.

There is, as a matter of fact, no really good reason why people should not learn to know a new plant by its Latin name just as easily as by some common name. Latin names seem difficult only because it has come to be the fashion to think of them as difficult. Once they

become familiar, the average citizen uses them without being aware that he is not using common English names. Chrysanthemum, Hydrangea, Nasturtium, Narcissus, Geranium, Fuchsia, Rhododendron, Azalea, Wisteria, Yucca, and Asparagus, for example, are all scientific Latin plant names, and hard ones at that; but familiarity has robbed them of their terrors.

Most of the plant families represented in the Conservatory have members growing in our fields or woods or gardens. Some of the showiest specimens exhibited in the Aeroid House, for example, belong to the same family as the insignificant day-flower that is so widely known as a weed in our gardens. Some of the most useful plants shown in the Economic House belong to the same family as our poison ivy. It has been felt that many people would be interested in noting the similarities or dissimilarities between different members of the same plant family; hence the name of the family to which each species belongs has been included in the following pages, together with the name of one or more local representatives of the family, where such representatives are known

There have been included, also, such facts of general, literary, or economic interest about the plants as were available at the time of compilation. Much of the information contained in the following pages is based on personal observations made by Mr. Koch, who has built up the collections to their present state. Other information has been compiled from such authoritative sources as Smith's "Dictionary of Economic Plants," Bailey's "Standard Cyclopedia of Horticulture," Gray's "New Manual of Botany," Roger's "The Tree Book," the "Encyclopedia Britannica," the "Encyclopedia Americanna," and the "New International Encyclopedia."

JOHN DILL ROBERTSON, M. D.,
President

Introduction

GARFIELD Park Conservatory is the largest publicly owned conservatory in the United States, and has been widely acclaimed as the most beautiful. Nowhere else in the whole world has an attempt ever been made to build greenhouses for the exhibition of exotic plants in a public park with public funds on such a large scale.

The Conservatory is under the jurisdiction of the West Park Board. The West Park Board is a distinct municipality in itself, independent of the City of Chicago, with absolute control over the parks, playgrounds, and boulevards under its jurisdiction. It is composed of seven members, appointed by the Governor of the State. It derives its powers from the State. It is maintained by a yearly tax levy, equal to a certain percentage of the total tax valuation levied upon the property in the West Chicago Park District.

Prior to 1905, each of the large West Chicago Parks—Humboldt, Garfield, and Douglas, had its own conservatory and propagating houses. As these buildings were all old and beyond repair, new buildings had to be considered. The West Park Board decided to reduce maintenance and other costs by erecting one great conservatory instead of three smaller ones, and Garfield Park was selected as the site for the new structure. The present building was designed by Hitchings & Company, of New York City, and was erected at an approximate cost of $276,000. It was completed in 1907.

The greatest height of the Conservatory is 65 feet. It contains 68,055 square feet of floor space, and a cubic content of 1,927,400 cubic feet. It is roofed over by 104,700 square feet of glass. 26,738 square feet of steam radiation are required for its heating. Its heating plant has a capacity of 1,000 horse power.

About a half million people visit the Conservatory each year. The greatest attendance is during the three large annual exhibitions—the Chrysanthemum Show, the Christmas exhibition, and the Easter exhibition. The Conservatory can accommodate 4,500 visitors at a time without crowding, and hopes eventually to have an annual attendance of several millions. The largest single daily attendance yet recorded is for November 11, 1923, when 33,981 visitors were counted on entering.

The Conservatory contains about 300,000 specimens, representing about 3,000 species and varieties of plants. These are grouped, in the main, according to plant families—a most logical way of arranging them, but one not in effect in any other large collection anywhere in the world, so far as is known. The total value of the collection is well over a million dollars.

The Conservatory is divided into seven rooms, each with a different temperature and humidity. There are, in addition, 13 propagating houses, 400 sashes of hot beds and cold frames, a potting shed, and 5 supply sheds making up the plant. The propagating houses are used for growing plants until they are ready for exhibition; for propagating plants to be used in the great outdoor plantings in the West Chicago Parks; for nursing sickly specimens back to health; and for developing spores, seeds, cuttings, and seedlings into specimen plants for the Show, Palm, Fern, Aeroid, Warm, Economic, and Bay Houses. The cold frames and hot beds are used for propagating such plants as do not require to be kept under glass the year round. Many of these plants are used to keep up the display in the Show House; others for the plantings in the various parks. The supply sheds are used for the storage of pots, tubs, compost, and equipment of all sorts.

The walks and the original plantations of the Conservatory were designed by Mr. Jens Jensen, who was landscape architect for the building. The present plantations of the Conservatory are the work of Mr. August Koch.

In 1912, the West Parks Board appointed Mr. August Koch, of the Missouri Botanical Gardens, as chief florist, in charge of the Conservatory and of all outdoor plantings within the West Chicago Parks.

There are in the world, according to Bailey, but six great botanic gardens that combine the features of a scientific institution for research and education with those of a public park: Kew Gardens, the Jardin des Plantes, the Berlin Botanic Gardens, the Botanic Garden of the Imperial University at Tokyo, the Missouri Botanical Gardens, and the New York Botanical Gardens. Mr. Koch came to Garfield Park Conservatory with the determination to build up an institution that could stand comparison with the world's greatest botanic collections. That he has already accomplished. There is no larger nor more interesting collection of exotic plants under glass in the United States than the one housed in this Conservatory. What he has accomplished, Mr. Koch has accomplished against the handicaps of climate and of the vandalism that seems to be inseparable from a public park. His success has been due in no small part to the intimate knowledge of rare plants and plant markets that he acquired while at the Missouri Botanical Gardens, as well as to the acquaintances and friends that he made among collectors and scientists of the world while there.

In the beginning Garfield Park Conservatory was stocked with the plants that had been housed in the three smaller conservatories that it replaced. There were, of necessity, many duplicate specimens. Mr. Koch at once began to exchange these duplicate specimens for rarer ones. He also began propagating new and rare species from spores, seeds, root cuttings, and the like. Some of the most magnificent specimens in the present collection were grown from a handful of mixed seed that a returned missionary from Africa gave him. Among these are two handsome calatheas that are, so far as is known, still unnamed. Two large specimens of one of these calatheas flank the lagoon in the Fern House, and are among the most admired foliage

plants in the Conservatory. Other rare species have been grown from bits of root, or spores, or seeds that were contained in the packing material around palms and other specimens shipped in from tropical countries. Mr. Koch has long made a practice of sowing all soil from such shipments in order that whatever minute seeds or spores it contained might have a chance to germinate; and he has secured a number of interesting specimens in this way. Various other valuable specimens have been developed from bits of root that were found mixed in with shipments of orchids. Most of the rare plants in the collection, however, have been developed from seeds, spores, cuttings, or seedlings bought from the foreign firms that specialize in such material.

There are individual plants in the present collection for which fanciers would pay many thousands of dollars, if they could come into possession of them in an undamaged condition. Many plants are so large or so rare as to be priceless, especially since Quarantine Act 37 has made it practically impossible to import plants and seeds from foreign sources. There are in the world several firms that make a specialty of tropical plants, supplying spores, seeds, cuttings, and seedlings to the trade; but Quarantine Act 37 has practically cut off American horticulturists from these sources of supply. There are a few Florida and California firms that specialize in growing tropical plants; but their stock is most limited, and they are at as great a disadvantage as the Conservatory in attempting to add to it. This situation has made it profitable for certain persons to steal rare plants and dispose of them to fanciers, with the result that the Conservatory, in spite of all precautions, is being constantly robbed.

Soon after Mr. Koch was placed in charge of the Conservatory, he found that it was necessary either to remove many palms from the Palm House or to rearrange the plantation. The original arrangement provided a vista lengthwise of the Palm House, through the center of the room, with a fountain in the center of the vista. This arrangement had been most effective while the palms were of moderate size, but became increasingly difficult to maintain as the specimens increased in size. Many palms grow very rapidly—one of the coconut palms that now touches the roof of the Conservatory, for example, has grown to that height in eleven years. Mr. Koch finally determined upon the present arrangement, which permits the palms to develop characteristically without any loss to the general picture. He was all the more willing to change the plantation because the change enabled him to secure the vista from the entrance through into the Fern House—a vista that is now generally conceded to be the Conservatory's greatest single charm.

Other changes have been made from time to time. The old Aquatic House, which was originally arranged as a display of aquatic vegetation and wonderful rockwork, with fine specimen ferns and tree ferns disposed at points of special vantage, has been converted into the Fern House, with a plantation suggesting the characteristic vegetative exuberance of a humid tropical region. The old New Holland House has been changed into the present Economic House. The Conifer

House has been changed into an Aeroid House. The old Economic House has been changed into the Bay House. At present Mr. Koch has plans for a rearrangement of the Economic and Bay Houses, as soon as sufficient funds become available for the construction of the necessary retaining walls. In these two houses all specimens are planted in tubs or pots, and it has proved impossible to secure the desired artistic effects, effects such as could be secured if the specimens could be planted in solid beds of soil.

Permanent plantations—such as those in the Palm, Fern, and Aeroid Houses—have been arranged from both an artistic and an educational standpoint—that is, to present a lovely picture to the eye, while at the same time making available to the student a wealth of botanic material, grouped so as to make comparison between different species and genera especially easy. Mr. Koch has plans drawn for a rearrangement of the Economic House wherein trees of economic value will be grouped to afford a landscape effect, with shrubs and herbs of economic value growing as an apparently natural undergrowth. He has hopes of some day arranging an exhibit of Biblical plants in what is now the Bay House. He feels that there would be widespread interest in such a collection, and the Conservatory has plenty of material to serve as a foundation for such a collection—myrtle and olives and figs and oleanders and pomegranates and camphire and cedars of Lebanon and shittah trees, and the tree that furnished the husks on which the prodigal son dined, and many others.

As You See It

THERE is an old story of a painter, a lumberman, and a botanist who went for a walk together through a forest. The painter noted the play of light and shade on the forest floor, the coloring of the trunks and foliage, the arrangement and composition value of the trees and undergrowth. The lumberman noted the number of feet of oak and of maple that could be cut from the tract, and estimated the cost of getting it out. The botanist noted the species that made up the plant association and various factors bearing on their ecology. The three walked together; but each saw only what his own training and interests had fitted him to see.

The interests of those who visit Garfield Park Conservatory are as diverse as those of the men of the story, and, similarly, each visitor sees the place according to his own training and interests. To the artist it is an exquisite study in mass and color. To the landscape architect it is a perfect example of the way in which an effect of spaciousness may be secured in a small space; of the way in which two or three specimens may be made to suggest a great mass of plants; of the way in which a handful of ferns may be made to blot out a walk. To the engineer it is an interesting example of the way a curved dome may be secured without using any curved sash; of the way humidity may be secured in a room by concealing great water tanks beneath banks of verdure; of the way the necessary heating pipes may be hidden from sight without any loss of efficiency. To the botanist it is a collection of rare and curious species, grouped in such a way as to allow him to study them with the greatest possible ease — nowhere else in the whole world is there a collection of anything like equal size grouped according to plant families. To the school child it is a bit of visual education, a presentation in the concrete of the things of which he has been studing in his geography and history—the coffee tree and tea shrub, the rubber trees and cotton plants, the coconut palms and fig trees, the mango and breadfruit trees, and a hundred other things. To the garden lover, the conservatory gives an opportunity to see and study the varieties and species of which he has been reading in his flower catalogs and garden magazines. To the general public, it is, as Lorado Taft has noted, a piece of fairyland.

The impression of fairyland, as he has pointed out, strikes the visitor as soon as he is well within the doors; and though one sees the exquisite vista a thousand times, the impression of fairyland never wears away. The impression is marked at any time; but is especially so during the evenings when the conservatory is open for the three great exhibitions of the year. Then the place seems the very embodiment of romance and enchantment, and one never gets over expecting to see Titania and her fairy subjects troop forth to dance on the meadows at the edge of the lagoon.

Hundreds of those who enter the conservatory for the first time take it for granted that the Fern Room is simply a painted background. They say it is too perfect to be real—and indeed it seems that those who speak of it as the most beautiful room in the world are not overpraising it. The arrangement of the Palm Room adds to the illusion of a great picture.

The Sculptor's Interpretation

"THE little whimsies have no great burden of significance. They represent care-free maidens and faun-like youths of some remote period as they might idle and play in the forests of Arcadia. It was my thought merely to make something graceful and appropriate for the greenhouse, something that would add to the impression of fairyland which strikes all visitors in that wonderful place. A statue or painting will often serve as a symbol of a mood, not infrequently transporting one far from the cares and annoyances of daily life.

"I wish that every small park and playground might have its fit sculptural adornment—a kindly genius of the spot, as it were. Such an image would stand in memory for the place and the pleasure that it has given. One's affections gradually entwine these gracious symbols and they serve to make happy memories more vivid. The greater works of art are like storage batteries in which the author has concentrated his emotions, a never diminishing store, to be drawn upon by those who follow. This the masters, great and little, have done for us in generous measure, and 'we have entered into their labors.'

"These little groups planned for their pedestals in the West Side Conservatory have been a labor of love and I trust that they may give pleasure to many."

LORADO TAFT, *Sculptor*

"Pastoral" and "Idyl"

The Entrance

THE entrance to the Conservatory is dignified and beautiful, and in keeping with the atmosphere of the Conservatory as a whole—such an atmosphere as is commonly associated with a great library or a great art gallery.

The entrance has been arranged to afford an imposing view through the center of the Palm House and down the length of the Fern House. In the immediate foreground is a fern-bordered pool, flanked by Lorado Taft's beautiful groups—"Pastoral" and "Idyl"—and by formal exhibition shelves whereon is maintained a constant display of flowering orchids and choice Aeroids, supplemented during a few months of each year by gloxinias, tuberous begonias, and similar material.

The orchids are kept in the propagating houses during the time that they are out of bloom. The collection is a large and most valuable one, comprising between 3,000 and 4,000 specimens, representing about 500 species and varieties. The greatest exhibition of orchids is during the period between October and June, although there is never a time when less than 30 species are on exhibition.

The Aeroids shown are usually some of the Anturium hybrids, commonly known as "Flamingo Flowers." A large collection of related species is on exhibition in the Warm House.

Among the most interesting of the orchids are the following:
Aerides, a genus noted for its long racemes of flowers. The collection includes a dozen species from the Malay archipelago, India, and Japan.

Angraecum, a genus from India, Japan, and Madagascar. The lection includes 4 species, among them the STAR OF BETHLEHM ORCHID, which blooms at Christmas time. This rare orchid has a star-shaped waxy white flower with a drooping spur nearly a foot long that represents the tail of the Christmas star.

Angulca, a choice genus from the South American Andes, represented in this collection by 3 species, among them the BOAT ORCHID, whose very fragrant flowers are shaped more or less like a boat.
Brassia, a genus from Guatemala.

Calanthe, a terrestrial orchid represented in this collection by 26 specimens. This orchid, which bears long racemes of pink or white flowers, is very hard to grow and is rarely seen in collections.

Cattleya, a genus from tropical America, represented in this collection by more than 90 species, varieties, and hybrids. This is the showiest of all the orchids, and is the favorite with the orchid buying public. *C. Labiata* is the common cattleya of commerce. Most of the cattleyas sold by local florists are grown by two local orchid growers, one in Naperville and the other in Morton Park. The collection here includes many hybrids that are so expensive that they will never be profitable as commercial orchids. These orchids, along with all the other epiphytic orchids in the collection, are grown in a special fiber prepared by a New Jersey firm from the roots of certain native ferns.

Chysis, a genus from South America, represented here by 2 species.

Coelogyne, a genus from the Khasia Hills, Nepal, and other parts of the Eastern Hemisphere, represented in this collection by 9 species.

Cymbidium aloifolium, one of the handsomest of all orchids. This orchid, which bears many-flowered racemes of pale purple flowers, is a native of the East Indies.

Cypripedium, now known as *Paphiopedilum* and *Phragmopedilum*. This is probably the best known of terrestrial orchids, and is represented in this collection by more than 90 species, varieties, and hybrids. Formerly all these orchids were classified in the same genus as the lady-slippers and moccasin-flowers of our northern woods.

Dendrobium, a showy genus from Asia and the islands of the Pacific, represented in this collection by 15 species.

Epidendrum, a genus from South America, represented here by 9 species.

Eria stellata, a very rare and curious Asian orchid.

Laelia, a genus from Mexico, Guatemala, and Brazil, represented here by 12 species and varieties. This beautiful orchid has been crossed with the cattelyas to produce many of the most beautiful hybrid orchids.

Maxillaria, a genus from Mexico, represented here by 3 species.

Odontoglossum, a genus from tropical America, represented by 4 species.

Oncidium, another genus from tropical America, represented here by 11 species. These are short-lived orchids, and the stock must be replenished frequently from tropical America. There is considerable danger that many species will soon become extinct.

Peristeria elata, or HOLY GHOST ORCHID, or DOVE ORCHID, is a species from Central America. It bears flowers shaped like a white dove, and often has from 12 to 13 flowers open at a time. This orchid blooms in the Conservatory during April or May.

Phaius, a genus of large-flowered orchids from China and Australia. This is one of the orchids that has been longest in cultivation.

Phalaenopsis, or MOTH ORCHIDS, a genus from the Malay archipelago and the Philippine Islands. This orchid, sometimes called the grandest of all orchids, bears great racemes of moth-shaped flowers.

Pholidota, a genus from India and China, represented here by 2 species.

Renanthera coccinea, a species from the Malay Peninsula and Cochin-China, that is rarely seen in bloom. Usually, however, it blooms each year in the Conservatory, bearing long racemes of reddish orange flowers. This orchid grows more than 15 feet in two years, and must be kept cut back. It is grown on a specially constructed frame in order that it may be handled for exhibition. It blooms in August.

Saccolabium, a genus from Burma, represented here by 3 species. This orchid bears long racemes of exquisite pink flowers.

Schomburgkia, a showy and beautiful genus from tropical America, represented here by 4 species.

A view of the Palm House, showing a banana tree in flower.

Sobralia, a large flowered genus from Mexico. This orchid in its growth looks as if it belonged to the bamboos rather than the orchids. It is represented here by 3 species.

Stanhopea, an interesting genus from tropical America. The flower spikes of this genus insist upon growing downward. The roots, therefore, are never planted in crocks; but in slatted baskets that will permit the flower to come through the bottom.

Thunia, a terrestrial genus most difficult to grow.

Vanda, a genus from East India, Burma, Java, and the Philippines, represented here by 8 species. One species bears wonderful blue flowers, a color unusual among orchids.

Zygopetalum, a genus from Brazil, represented here by 2 species.

The Palm House

THE Palm House is the largest room in the Conservatory. It takes its name from the fact that the dominant species in the plantation in this room are palms and palm allies. The room has been arranged to bring out a landscape effect characteristic of a tropical region, with great columnar trunks of palms, overhanging vines, and dense undergrowth. Here tropical plants grow and feed and flower and fruit as in their native habitat. Here epiphytic vines drop their feeding roots from the girders and columns as they drop them from the trees in their native jungles; here ferns establish themselves in the fiber of young palm trunks and are carried high into the air by the growing trees, just as in their native home; here the bananas and the Ceriman and the palm fruit just as they do in the land far to the south of us.

The Palm House contains specimens representing all the genera of palms that can be grown in this temperature, and most of the specimens are already large enough to show the characteristics that are distinctive of the genus represented. Here and there palms are shown with their baby leaves, looking like draccenas or other members of the Lily family; but for the most part the specimens shown here are well-grown ones. The specimens in this room are all planted in solid beds of soil, and it will be noticed that they grow much better when so planted than when grown in tubs, as are the specimens in the Economic House.

The palms in this room produce sufficient seed to enable the Conservatory to grow all the palms needed for decoration in other parts of the Conservatory; and there is never a time when the visitor will not find at least a few species in fruit.

The value of the collection shown here cannot well be estimated, because many of the palms and vines are of such size as to be inval-

uable, and many other are so rare that it would be impossible to duplicate them under the present quarantine regulations. It is conservative to say that there are fanciers in the country who would pay hundreds of thousands of dollars for a duplicate collection, if such a thing were obtainable.

This house contains, in addition to the palms, a large collection of bamboo, a collection of eucalyptus, a collection of rubber-producing plants, and various smaller collections. Of the several hundred species represented, the ones that are probably of the most general interest are the following:

Acalypha, or COPPER-LEAF, or THREE-SEEDED MERCURY, is a genus of the Euphorbiaceae, or Spurge family, represented here by 9 of the best known species. These are gorgeous foliage plants that are much used throughout the West Chicago Parks as bedding plants. The plants are hardy in Florida, but will not live outdoors over winter here. The specimens shown at the southern end of the Palm House are shrubs of 10 to 12 years' growth. In time they will become much larger unless kept pruned.

Archontophoenix Cunninghamii (*Seaforthia elegans*) is one of the most stately and graceful palms known, and the specimen here is one of the Conservatory's tallest palms. It bears great sprays of shell-pink flowers, followed in the fall, by great masses of scarlet red seeds. These seeds add materially to the beauty of the palm.

Arenga saccharifera, or ARENGA SUGAR PALM, is the largest specimen in the Conservatory; yet it is but 13 years old. It is a native of Malaya, homely during its juvenile stage, but developing into a handsome tree when about 10 to 12 years of age. At that age the palm sap begins to yield "arenga sugar," much valued in its homeland. When the last flower cluster of this palm reaches maturity, the tree dies. The species is of value in India for the yield of black fiber from the leaf-bases. This fiber, known as gomuti, resembles horsehair in appearance, and is used in making filters and in caulking ships.

Aspidistra lurida (*A. elatior*), is a popular foliage plant that belongs to the Lily family. It is perhaps the best of all foliage house plants, because it withstands rough usage, dust, heat, cold, drought, and general neglect.

Attalea Cohune, or COHUNE PALM, is a native of Honduras, where it attains a height of 60 feet. The fruit yields a finer oil than coconut oil, exported largely to France for use in soap-making. The sap can be made into an intoxicating beverage. This collection includes 3 other species of the same genus—all very slow-growing.

Bactris major (*Guilielma speciosa*), or BEACH PALM, a native of Brazil, bears edible fruit the size of an apricot.

Bambusa, or BAMBOO, is a native of tropical, subtropical, and a few temperate parts of the earth. The greatest number of species are found in China, where the bamboo is one of the most important of economic plants. This collection includes many species—including the "fishing-pole" bamboo, the vining bamboo, the giant bamboo, the

blue bamboo, and the native bamboo that forms dense canebrakes in our southern states. In the Conservatory the giant bamboo grows at the rate of 18 inches a day. In its own home it reaches a height of 120 feet in a month. All the species here make their chief growth in September, and are at their loveliest during the fall. Bamboos are decorative plants, and are particularly attractive when planted by fountains as they are planted here, or by streams, as they are in the Fern House. The bamboo has many economic uses. The young shoots are eaten as asparagus is eaten, or are canned, or are pickled in vinegar. The stems are used for water pipes, for bridge building, for house building, and for other construction purposes. Split stems are used for weaving nets and hats, for making umbrellas, and for making fishing poles. Small stems are used for walking sticks and for making wickerware. The stems of some species are used in paper making. The leaves of the larger species are used in thatching. The sap may be dried to make a sort of sugar that the ancient Greeks knew as Indian honey. The seeds of some species are eaten instead of rice, and the seeds of other species are used in making beer.

Bougainvillea, a showy and beautiful vine from tropical America, belongs to the Nyctaginaceae, the family to which the four-o'clock of our gardens belongs. The Conservatory has a number of species of this vine planted to climb over the roof supports in various houses. The largest vines are in this room, and bloom during April and May.

Calamus. This is a genus of palms with slender stems, furnished with stiff-hooked prickles that aid the palms to scramble up over other plants. The stems of these palms are used in making hats, mats, ropes, bridges, etc. They are imported into this country under the name of Rattans, and are used for making wickerwork and chair bottoms. One species is the source of Malacca canes. The collection here includes representatives of a number of species.

Carludovica palmata, or PANAMA HAT PALM, belongs to the Cyclanthaceae, a palm-like family of tropical America. This plant has great decorative value; but its chief interest lies in the fact that its leaves are used in making the genuine Panama hats of commerce. The best hats are said to be made from a single leaf, without any joinings. The leaf is cut when young, the stiff veins are removed, and the rest of the leaf is shredded, but is not separated at the stalk end. The shreds are then plaited to form a hat. The collection here includes representatives of 6 other species from whose leaves the cheaper grades of hats are made.

Caryota urens, or FISH-TAIL PALM, or WINE-PALM, is a most graceful palm that is a native of India and the Malay region. It bears a purple fruit about the size of a cherry. A full-grown tree will yield about a pint of wine per hour for a great length of time. The wine in its fresh state is a wholesome beverage, and an important article of commerce. When fermented it yields an alcoholic drink. The trunk of the tree yields a sort of sago.

Ceroxylon andicolum, or WAX PALM, is a native of the Andes. Its

slender trunk is covered with a waxy substance that is used in making candles, and forms an important article of commerce.

Chamaedorea, is a genus of palms distributed from Mexico to Panama, and represented here by 10 species, all bearing showily colored fruit.

Chamerops humilis is a low-growing fan-leaved palm that is noteworthy as being the only palm that is a native of Europe.

Chrysalidocarpus lutescens (*Areca lutescens*), or GOLDEN FEATHER PALM, is a popular palm from Madagascar, much sold by florists. Here is sends up numbers of shoots from the roots, forming clumps. There are 4 or 5 large clumps growing here.

Cocos plumosa, or PLUME COCONUT, a native of Brazil, is one of the loveliest palms in the collection. It is the chief avenue palm of its genus, and is widely planted in California, Florida, and other warm countries. The name is from the shape of the leaves, which resembles that of an ostrich plume.

Cocos coronata has reached the roof of the Conservatory. The seed was planted 13 years ago.

Cocos sp., an unidentified species, shows the characteristic growth of certain members of the genus. The trunk of the tree curves, and nothing will compel it to grow straight. The collection of coconut palms includes representatives of 8 other species.

Daemonorops palembanicus, a slender palm from Sumatra, sends up canes that reach a height of 120 feet in its native jungle. The canes bear spiny tendrils 3 to 6 feet in length. The young leaves are a most brilliant henna in color.

Dictyosperma, a genus of palms much sold as house palms, in the juvenile state, is represented here by 2 species.

Dombeya Wallichii, or CHRISTMAS ROSE, belongs to the Sterculiaceae. The tree bears, at Christmas time, great clusters of pink flowers that look like pink snowballs. Other species are in the Economic House.

Dracaena draco, or DRAGON'S BLOOD TREE, belongs to the Liliaceae, or Lily family. A tree of this species growing in Teneriffe was long supposed to be the oldest vegetable organism in the world. A red resinous substance, called Dragon's Blood, collects at the base of the leaves. After the leaves fall, this substance hardens and may be scraped off. It is used for varnishing and staining wood, etc. Other species of dracaena are to be found in the Warm House.

Euterpe edulis, or PARA PALM, or ASSAI PALM, reaches a height of 90 feet in its native country, Brazil. The palm is a most useful one. The trunks are used for rafters and poles. The terminal bud, or "cabbage," is eaten as a vegetable. The fruits, when kneaded in warm water, produce a creamy product known as assai, which is eaten in the tropics on starchy foods. A beverage is also made from the fruit.

Ficus. For discussion, see Economic House. The specimens shown here represent a number of species, the most important of which are probably the following:

The Show House during the Easter exhibition.

Ficus elastica, or INDIA RUBBER PLANT, the species commonly grown as a house plant, and the source of some rubber.

Ficus repens, or CLIMBING FIG, an excellent climber, is used in many parts of the Conservatory. It shows up especially well where it grows around the base of the statues in the entrance to the Conservatory, and around the entrance to the Fern House. This vine bears a fruit the size of an ordinary fig; but not palatable. The leaves of the fruiting branches vary in size and shape from those of the rest of the vine; hence it has happened that the vine has been described under various names.

Howea Forsteriana, or THATCH-LEAF PALM, is one of the most important palms grown for the home. The species comes from Lord Howe's Island. The palm does not fruit in this country. Two large shipments of seed are exported from Lord Howe's Island each year, and from these seed the nurseries grow this palm by the hundred thousands.

Howea Belmoreana, or CURLY PALM, is also from Lord Howe's Island, and is also grown from seed exported from there. It is only less popular than the preceding species.

Jubaea spectabilis, or WINE PALM OF CHILE, is the southernmost American palm. A grown tree yields about 90 gallons of sugary sap, which is boiled down to produce palm honey, or jaggery, a product used on ships and at coast hotels. There is some danger the tree will be extermintated. The edible fruit resembles small coconuts.

Kentia Sanderiana is a rare palm that sends up many graceful sprouts from the root, hence is always surrounded by young palms.

Kentiopsis macrocarpa is an exceedingly rare palm from Australia. It makes but one new leaf each year. It is valued for the rich henna color of the young leaves.

Livistonia australis, or AUSTRALIAN FAN PALM, is the tallest palm in the Conservatory. The leaves are used for thatching and fans.

Livistonia chinensis, a related species from China, is the most common species of fan-leaved palm in horticulture today. The specimen here is practically always in fruit.

Magnolia grandiflora, or BULL BAY, belongs to the Magnoliaceae. It is a native of the southeastern United States, where it grows to be a tree 100 feet in height. The fragrant flowers often measure 10 to 12 inches across, and are borne in great profusion. The flowers are followed by ornamental coral-red seeds. This is considered the finest of all broad leaved evergreens. In the Conservatory it blooms in May and June.

Monstera deliciosa, or CERIMAN, or MEXICAN BREADFRUIT, a native of tropical America, belongs to the Araceae, or Aroid family. This vine is grown in various parts of the Conservatory, having been found unusually well adapted for covering the iron supports and girders in this house and the Fern House. Its rather showy flowers are borne during summer and fall, and fruit may be seen on the vine at almost any season. The fruit looks much like a cucumber, and has the flavor of

pineapple. It is delicious when eaten on ice cream or other dessert, and the growing of it has become something of an industry in Florida.

Musa, or BANANA, belongs to the Musaceae, a family with no local representatives. This is the largest tree-like herb known. Many species attain their full size in less than a year. This collection includes representatives of 11 species, some of which are grown for their fruit, others for their fiber, and still others for their decorative foliage. Among the most interesting species shown here are the following:

Musa Cavendishii, or CHINESE DWARF BANANA, a species from China that grows but 3 to 4 feet in height. The fruit is good and stands shipment well. The species is grown to some extent in our southern states and in the West Indies.

Musa Ensete, or ABYSSINIAN BANANA, the largest known and most widely cultivated decorative banana. It yields a good fiber. This species is shown in ancient Egyptian sculpture.

Musa sapientum, which takes its specific name from the fact that this is supposed to be the tree of the knowledge of good and evil, of which Eve ate the fruit. The species has been cultivated from the most ancient times, and dozens of varieties are now known. Marketable bananas do not produce seed—they have been cultivated so long that they have ceased to form seed. New plants are grown from the sprouts that come up around the base of grown plants. The climate that suits the banana best is the one that suits white men the least. The bananas of commerce are picked green and ripened after they reach market. The United States and England are about the only temperate countries where the fruit is much used—elsewhere it is looked upon as a sort of curiosity. In tropical countries the fruit is usually picked green and cooked. The most delicious variety of this species that is grown in the Conservatory is the "Lady-Finger Banana," a species popular in Florida and the West Indies. The fruit of this banana is most delicious Probably the most slow-growing variety of this species in the collection is the Red Banana, which took 9 years to grow to fruiting size.

Oreodoxa oleracea (*Areca oleracea*), or CABBAGE PALM, is a popular avenue palm from the West Indies that reaches a height of 120 feet. There are many avenues of this palm in Florida. The natives of the West Indies cut the trees when they are about 3 years old and eat the crown bud or "cabbage," which is tender and delicious.

Oreodoxa regia, or ROYAL PALM, is a related species that is equally popular as an avenue palm. It is a native of Cuba and Panama. The trunks are used for piles for wharves.

Pandanus utilis, or SCREW-PINE, a native of Madagascar, belongs to the Pandanaceae, a family with no local representatives. The tree is remarkable for the spiral arrangement of the leaves, and for the great aerial roots that look like stilts. The young plants are a most popular table and house plant. In the tropics this tree is as valuable to the natives as many of the palms. The fruits are edible, and taste much like rutabaga. The roots furnish fiber for ropes, baskets, mats, and

boats. The leaves are used in making nets and paper. The collection also includes representatives of 8 related species.

Philodendron. The philodendrons are showy tropical vines belonging to the Aeroid family. All bear showy spathes or fruit. Many of them contain poisonous properties, either in the sap or the root. The collection includes 15 species from tropical America, distributed through this house, the Fern House, and the Warm House.

Phoenix. This is the genus to which the date palm belongs. The collection includes 9 species. They bloom here in the spring, and some of them bear flower sheaths that are most showily colored. Probably the most interesting species are the following:

Phoenix dactylifera, or DATE PALM, a native of North Africa, Egypt, Syria, and Arabia. It is the palm found growing in the oases of the deserts. Its fruits grow in bunches of 20 or more, and are highly nutritious. They form an important part of the diet of millions of people. They are also used as a food for camels and other domesticated animals.

Phoenix sylvestris, or WILD DATE, of India, is cultivated for the sap, which yields sugar and toddy. About 8 pounds of sugar can be made from the sap of one tree. Many thousands of tons of this sugar are produced annually in India.

Pothos, or SHINGLE VINE, an Aeroid from Borneo and the Solomon Isles, will be found growing in various parts of the Conservatory, and may be seen in the different stages of growth—first as a young vine with leaves that look like lily leaves; later as a larger vine with the leaves overlapping each other like the shingles on a house; still later as maturing vines with leaves slightly perforated; and finally as full-grown vines with the leaves so much divided that they look like those of a totally different plant.

Pritchardia Gaudichaudii, a rare palm from Hawaii. Small specimens bring as high as $300.

Rhapsis, or RATTAN CANE PALM, a low fan palm from China and Japan, represented here by 2 species. Both sucker freely and produce large clumps.

Ricinus communis, or CASTOR BEAN, is a member of the Euphorbiaceae. It is a native of India and is cultivated extensively in that land for the oil that is pressed from the seeds. The oil is used medicinally, in the arts, and in preparing food. The seed contains a poisonous principle. This is supposed to be the gourd of Jonah, and is extensively used to create a tropical effect. It is erroneously supposed to keep away garden moles and malaria.

Rohdea japonica, a native of Japan and China, belongs to the Liliaceae, or Lily family. It is a favorite plant in Japan, where hundreds of varieties are grown, and where a small specimen but a few inches high often brings as much as $500. It is the plant adopted by the Manchus as their national flower, and is the subject of many books. It has proved hardy as far north as Washington.

Sabal glabra (*S. Adansonii*), or DWARF PALMETTO PALM, or BLUE PALM, is a native of the southern United States. The stem of this species is underground, causing the plant to appear stemless.

Sabal Palmetto, or CABBAGE PALMETTO, is a native of our southeastern states; attaining its greatest perfection along rich river banks in Florida. It is extensively used as a shade and avenue tree throughout its range. The crown bud, or cabbage, is highly valued as a vegetable. The wood is very soft and spongy, and will be remembered by school children as the wood of which southern forts were built during the Revolution—wood so soft that bullets would sink into it instead of penetrating it. The trunks are now much used as piles. The bark and leaf sheaths are used in making scrubbing brushes. Baskets, hats, and mats are made from immature leaves; houses are thatched with mature ones. Four other species of sabal also represented here.

Strelitzia Reginae, or BIRD-OF-PARADISE FLOWER, is a member of the Musaceae, or Banana family. It is a native of south Africa. The flowers are orange and purple, resembling a bird-of-paradise in shape and in color arrangement. This flower is one of the most unusual in the collection. It blooms here in April. The collection also includes *S. augusta*, a closely related species.

Trachycarpus excelsa, or FORTUNE'S PALM, is a Chinese fan palm with singular fibers along the trunk and the edges of the leaves. This is grown outdoors wherever palms can be grown in the United States, as far north as Oregon along the western coast, and as far north as Georgia along the eastern. It is the most imitated in artificial palms of any species.

Washingtonia filifera, var. robusta is a North American palm, especially characteristic of California.

Yucca guatemaliensis, blooms magnificently during May and June, but the plant is so high that the flower spikes, several feet in length, often are unnoticed by visitors.

A corner of the Show House during the annual Chrysanthemum Show.

The Show House

THIS house is used for exhibiting flowering and foliage plants throughout the year. So far as is known, Garfield Park Conservatory was the first conservatory of any size to maintain such an exhibition for twelve months of each year. Horticulturists had always insisted that such a thing was impossible, and had been satisfied if they managed to maintain a creditable display of flowering plants during the cooler months of each year. Here, however, by making the most of the plants known to general horticulture, in addition to a liberal use of tropical flowering plants and of rare plants that are unknown to the general trade, it has been found possible to maintain a large display the year round.

The number of plants exhibited in the Show House annually is between 60,000 and 65,000. The specimens represent all the species known to the commercial grower, as well as hundreds of species that are known only to plant fanciers and collectors During the poorest month of the year, the specimens shown represent at least one hundred species. Usually the display represents from 200 to 600 species and varieties.

Each year three large exhibitions are held: one in November, one at the Christmas season, and one at the Easter season. These exhibitions last from two to three weeks. During the weeks they are held, the Conservatory is kept open from 8 A. M. to 10 P. M.

The best attended exhibition is the Chrysanthemum Show, held in November of each year. At this show about 4,200 specimens are exhibited, representing more than 500 species and horticultural varieties of chrysanthemums, including the large-flowered chrysanthemums; the reflexed, or Japanese types; the incurved types; the pompoms; the pompom anemone—flowered; the Japanese anemone—flowered; the anemone—flowered; the decorative; the hairy; the single tubular-petaled; and curious chrysanthemums. The specimens shown range from small pot plants to great plants 7 feet in diameter, with as many as 600 to 800 flowers open at a time. The great chrysanthemum hanging baskets, measuring 7 feet across and with a thousand or more flowers in bloom, are always of especial interest to visitors. The Chrysanthemum Show last year was attended by 171,826 people.

The Christmas Show consists of poinsettias in many shades, together with a great variety of plants whose flowers or fruit are red, yellow, orange, or white. At this show there is a large display of red begonias, winter-flowering tuberous begonias, red and yellow capsicums, cyclamen, paper white narcissus, and the like. This show is usually attended by about 45,000 people.

The species displayed in this house are never identical for any two months; they are rarely identical for any two weeks. There are certain plant genera that are represented in this house the year round, but the species shown vary from month to month. There is not a week of the year, for example, when begonias are not to be found in bloom here; but the species are never the same for any two months. The

Another view of the Show House during the Chrysanthemum Show.

Conservatory has a collection of more than 40 different species and varieties of begonias, including some very rare and little known ones, and is thus enabled to maintain a constant succession of bloom.

During January, the emphasis in the display is on primroses, begonias, and bulbous plants.

During February, the emphasis is on cinerarias and bulbous plants.

During March, there is a special exhibition of shamrocks during the week in which St. Patrick's Day occurs. During the rest of the month the emphasis is on cinerarias and bulbous plants.

During April of each year the Easter Exhibition of spring flowering plants is held. All the shrubs, bulbs, and perennials that bloom outdoors here in the spring are shown at this time. After January 1, 1926, according to an amendment to Quarantine Act 37, America will no longer be able to import bulbs of the great Narcissus family. Mr. Koch has recently conducted a thorough canvass of the sources of American-grown bulbs, and finds that the total output of the American growers is insufficient to meet the demands of a single large city, much less of the country as a whole. Unless the amendment is repealed in the meantime, the character of the Easter display will necessarily be greatly changed in the future. At the present time the many varieties of daffodils, jonquils, and other members of the Narcissus family form a most important part of the display.

During May, the emphasis is on calceolarias, Martha Washington geraniums, and outdoor herbaceous plants—delphinium, penstemon, iris, and the like, that have been forced into bloom for this display.

During June, the emphasis is on gladioli and fuchsias.

During July, the emphasis is on tropical flowering plants and lilies.

During August, the emphasis is on crinums and lilies.

During September, the emphasis is on tropical greenhouse plants such as the chenille plant, on torrenia—or "wishbone flower," and on large-leaved coleus.

During October, the emphasis is on flowering hibiscus, jasmines, flowering plants brought in from outdoors, colored crotons, and colored acalyphas.

The newly planted Aeroid House. Mr. Koch, the Chief Florist of the West Chicago Parks, is shown standing beside the Traveler's Tree at the end of the lagoon.

The Aeroid House

THIS house contains a large and valuable collection of tropical foliage plants, belonging chiefly to the Araceae, or Aeroid family. The Aeroid family is a large one, chiefly tropical, represented in our local flora by the Jack-in-the-pulpit, green dragon, arrow arum, wild calla, skunk cabbage, golden club, and sweet flag. Probably the most widely known member of the family is the so-called "calla lily" of commerce. The true flowers of the family, which are sometimes very fragrant, are usually inconspicuous and are crowded together on a spadix that is surrounded by a spathe. Often the spathe is so large and brilliantly colored that the layman mistakes it for the true flower. There are a few specimens in this collection that bear spathes at least ten inches in length, and the colors range from white and cream through all shades of pink, salmon, scarlet, and maroon. The fruit of many species is as brilliantly colored as that of our Jack-in-the-pulpit, and is even showier, because larger.

The corm, or so-called root, of our Jack-in-the-pulpit, or Indian turnip, is intensely acrid, as anyone who has ever taken a bite of one knows to his sorrow. The same thing is true of many of the tropical species. Often, however, heating drives off the poisonous principle and renders the root fit for food. This is true of many species of caladium, alocasia, colocassia, and xanthosoma; and these plants are an important food source in some tropical regions.

Some species here represented are terrestrial in habit; but by far the greater number are epiphytic. In their native homes they live chiefly in the crotches of trees, feeding on the dirt and decomposing vegetation accumulated there. Here most of them are grown on stakes that have been wrapped with sphagnum moss that has been saturated with plant food.

The plantation in this room is a comparatively new one, having been arranged but a year ago. The plantation is, for the most part, a permanent one, designed to enable these plants to develop their individual characteristics as in their native homes. Few of the specimens shown here have yet attained their full size. Many of them, however, are already large enough to be priceless. There are a great number of specimens in this collection that are worth over a thousand dollars each—some of them could not be duplicated at any price. Many of the species represented are exceedingly rare—the collector from whom the royal elephant's ear was secured was on the look-out for twenty-five years before he was able to procure a single bulb of it. Many species are distinctly fancier's plants, requiring the most painstaking study of their habits and the most careful attention to their equirements if they are to be developed into exhibition specimens.

The specimens shown here represent more than 300 species. All of them are of interest to the specialist and the fancier; but few of them have any interest for the layman outside of their wonderful foliage, their spathes, and their fruit. Practically all that is worth noting

about them is obvious to the visitor. Among the few exceptions to this rule are the following:

Alocasia, a genus of gorgeous foliage plants from eastern Asia, represented here by more than a dozen species, some of which produce edible roots.

Anthurium Warocqueanum, a handsome and rare plant from Colombia, noted for its heavy, velvety green leaves that are veined with lighter green. The Conservatory has an unusually large collection of anthuriums, representing about 24 species and a number of horticultural varieties. This, however, is the handsomest species shown here.

Caladium. The caladiums are foliage plants that present an almost endless variety of coloring and markings. They are natives of South America. In their native lands they are valued for their "bulbs", or rootstocks, which furnish a valuable source of food. The leaves of many species are eaten as a vegetable . With us the plants are grown as ornamentals, the best known being the species *esculentum*, or elephant's ear. This collection is a large and valuable one, containing representatives of nearly 120 distinct species and horticultural varieties.

Calathea crotalifera, or RATTLESNAKE PLANT, a native of Guatemala, belongs to the Zingiberaceae, the family to which ginger belongs. The plant gets its name from the shape of its seedpods and the sound they make when shaken by the wind.

Calathea pulchella, a related species from Brazil, is a most gorgeous foliage plant. The upper surface of the leaves looks like dark green velvet, the lower surface like purple silk.

Calathea sp., two unidentified calatheas grown from seed brought from Africa by a missionary. These are among the most spectacular foliage plants in the Conservatory.

Carica Papayà—See Economic House.

Ceropegia Woodii, or ROSARY VINE, a native of Natal, belongs to the Asclepiadaceae, the family to which our milkweed belongs.

Cissampelos Pareira, or FALSE PAREIRA, a native of all tropical countries, belongs to the Menisperaceae, the family to which our local moonseed vine belongs. The "Pareira brava" of medicine is derived from the root of a related species.

Cissus, a tropical foliage vine, belongs to the Vitaceae, the same family to which the grape and the Virginia creeper belong. It is represented here by 3 species.

Columnea schiedeana, a native of Mexico, belongs to the Gesneraceae, a family with no local representatives. It is a choice climber that bears handsome scarlet flowers.

Costus, or SPIRAL FLAG, is a member of the Zingiberaceae, the family to which ginger belongs. Two species are grown in this house.

Dieffenbachia, or DUMB CANE, is a genus of Aeroids from Central and South America. The collection here is one of the largest in the country.

Another view of the Aeroid House.

The specimens are kept at the rear of the plantation in order to prevent the public from coming into touch with them. The juice from any part of the plant paralyzes the muscles of the mouth if brought into contact with it, and causes temporary loss of speech—hence its common name. The juice causes temporary blindness if it touches the eyes. In extreme cases of poisoning, the victim may die.

Dorstenia, represented here by numerous specimens of two species, is a native of the West Indies, Mexico, Venezuela, and Colombia, and belongs to the Moraceae, the family to which the mulberry belongs. This genus is of interest as the intermediate stage between figs and other plants, and bears a fruit that looks like a fig turned inside out.

Heliconia, or WILD PLANTAIN, belongs to the Musaceae, the family to which the banana belongs. The genus is represented here by 4 species, all from tropical America.

Maranta arundinacea, or ARROWROOT, a native of tropical America, belongs to the Marantaceae, a family with no local representatives growing farther north than Missouri. The name is said to be due to the fact that the Indians applied the root to wounds received from poisoned arrows. The rhizomes yield the arrowroot of commerce. Six other species are also represented here.

Panax fruticosa, a native of the islands of the Pacific, belongs to the Araliaceae, or Aralia family. This species bears five to seven different types of leaves on the same plant. Visitors usually mistake it for a product of grafting.

Ravenala madagascariensis, or TRAVELER'S TREE, is a native of Madagascar that belongs to the same family as the wild plantain and the banana. It is an exceedingly fast growing tree, named for the water that is always to be found in the space between the base of the leaf and the trunk of the tree. The specimen shown here is a seedling grown in the Conservatory. It will soon reach the roof of the building.

Spironema fragrans, a native of Mexico, belongs to the Commelianaceae, the family to which the Wandering Jew belongs. The plant bears most fragrant white flowers.

Tacca cristata, a native of Malaya, belongs to the Taccaceae, a family with no local representatives. This plant is in bloom the year round, and bears what are probably the oddest looking flowers in the Conservatory.

Xanthosoma, is another genus of Aeroids that produces edible tubers. The genus is represented here by 3 species.

The Bay House during the Chrysanthemum Show.

The Bay House

THE temperature in this house, but slightly above freezing, is the lowest maintained anywhere in the Conservatory. From October to June this house is used as a storage place for the large Bay Trees, Oleanders, and Agaves that are massed around the entrances of the Conservatory during the summer season. In it are stored, too, many economic species that flower and fruit outdoors here during the summer, species such as the olive, fig, pomegranate, and loquat. A collection of Cactus and other succulent plants, and a collection of tropical conifers are also kept here during the storage season.

During the three large flower exhibitions of the year, there are usually more specimens to be exhibited than can be shown in the Show House. At such times a display of flowering plants is to be seen here.

During the summer months the Bay House shelters a collection of fancy leaved Caladiums, Rex Begonias, and various tropical plants.

Eventually it is hoped to arrange in this house a permanent collection of plants of Biblical interest, with labels quoting the texts in which the plants are mentioned in the Bible, and the like.

Practically all the most interesting specimens shown here are described along with the plants in the Economic House, where smaller specimens of the different species are usually on exhibition. Among the specimens not described elsewhere may be mentioned the following:

Araucaria. The araucarias, which belong to the Coniferae, or Pine family, are the most prized of all pot evergreens, and are especially in favor at Christmas time. They are most attractive plants and will stand an unusual amount of hard usage. This collection includes representatives of 7 species, among which are:

Araucaria Bidwillii, or BUNYA BUNYA, a native of Queensland, where it forms extensive forests. The nuts form an important article of food for the natives, who migrate to the forests at the season when the nuts ripen. Each tribe or family has alloted to it a certain number of trees, which are retained from year to year. This species makes an unusually good pot plant.

Araucaria Cunninghami, a native of Queensland that reaches a height of 200 feet in its native land, and yields valuable lumber and resin.

Aucuba japonica, a native of Asia, belongs to the Cornaceae, the family to which our flowering dogwood belongs. This species is hardy in the United States as far north as Washington, and is valued for its handsome foliage and its bright scarlet berries.

Aucuba japonica, var. variegata, or GOLD DUST TREE, is a popular variegated form of the above species that takes its common name from the numerous yellow dots on the leaves.

Callitris robusta, or CYPRESS PINE, is a native of Australia, where it furnishes timber that is valued in building and in furniture making.

This species is closely related to the Thyime Wood mentioned in the book of Revelation.

Cereus. The cereus is a genus of the Cactus family. This collection includes representatives of 14 species, all of which bear large showy flowers. Some species produce fruits that are eaten by the natives of the arid regions where they grow. The so-called "night-blooming cereus" is not a true cereus.

Cotyledon gibbiflora (*Echeveria gibbiflora*), a native of Mexico, belongs to the Crassulaceae, the family to which hen-and-chickens belongs. The species is grown for its flowers and its foliage.

Dasylirion glaucophyllum, a native of central Mexico, is a most ornamental member of the Liliaceae, or Lily family.

Echinocactus, or HEDGEHOG THISTLE, is a genus of the Cactus family, represented here by 3 species. These plants are globular, very spiny cactuses from Mexico. In their native land they reach great size, and a well grown specimen may weight more than a ton Where water is scarce they furnish drink for herds of cattle, which become very clever in breaking up the cactuses with their hoofs and sucking the juice. The juice is valued by the Mexican Indians for its cooling antifebrile qualities.

Epiphyllum truncatum, or CHRISTMAS CACTUS, is a member of the Cactus family that gets its name from the fact that it blooms here at Christmas time. Elsewhere it is often known as "Crab Cactus" because the flower more or less resembles a crab or shrimp. This species grows as an epiphyte on the trees of its native land, and is especially grafted here for exhibition purposes. The collection also includes several related species.

Euphorbia splendens, or CROWN OF THORNS, a native of Madagascar, belongs to the Euphorbiaceae, the family to which snow-on-the-mountain and flowering spurge belong. This is a most striking shrub, in bloom the year round.

Furcraea, or MEDITTERRANEAN HEMP, or GREEN ALOE, is a genus of the Amaryllidaceae, the family to which the amaryllis belongs. The genus is represented here by 3 species.

Hechtia, a native of Mexico, belongs to the Bromeliaceae, the family to which the pineapple belongs. The genus is valued for its ornamental foliage, and is represented here by 15 species.

Juniperus, or JUNIPER, belongs to the Coniferae, or Pine family. The genus is represented here by 12 species.

Lagerstroemia indica, or CRAPE MYRTLE, a native of China or India, is a most beautiful shrub belonging to the Lythraceae, the family to which our loosestrife belongs. This is one of the most prized flowering shrubs in warm sections. It is hardy in the United States as far north as Washington.

Ligustrum ovalifolium, or CALIFORNIA PRIVET, a native of Japan, is an ornamental shrub that belongs to the Oleaceae, the family to which

The Economic House, showing a group of tropical fruit trees.

our lilac and ash belong. This shrub, which bears great panicles of white flowers, is widely grown throughout the warmer part of our country as an ornamental plant. It stands pruning well, and is in great favor as a hedge plant in sections where the winters are not too severe.

Osmanthus fragrans, a native of China and Japan, is a small evergreen tree that belongs to the Oleaceae, the family to which the lilac belongs. The species is valued for its handsome foliage and its fragrant white flowers.

Opuntia, or PRICKLY PEAR, is a genus of the Cactus family, represented here by 5 species, some of which are cultivated for their large edible fruits, others for their peculiarity. The prickly pear of our local sand dune region is a related species. All opuntias have showy flowers, usually yellow. They easily escape from gardens and become weeds. In many foreign countries they are especially disliked for this reason.

Pithecoctenium muricatum, a native of tropical America, belongs to the Bignoniaceae, the family to which the catalpa belongs. This species is valued for its showy flowers.

The Economic House

THIS house shelters a collection representing nearly 300 species of interesting tropical plants, chiefly woody, of especial economic value. The purpose of this room is distinctly educational. The other houses, of course, have a decided educational value. In them all manner of exotic plants are shown in characteristic growth, and the specimens are carefully labeled as to scientific name, common name, if any, and geographical distribution. The chief interest of the Palm, Fern, Show, Aeroid, and Warm Houses, however, always has been, and probably always will be, in their beauty. Eventually it is hoped to arrange a permanent landscaped plantation in this house that will be as beautiful in its way as the plantations in the other houses just referred to; yet the emphasis in this house will always be educational.

The specimens are here arranged in groups, according to their most outstanding economic value. The groups comprise Edible Fruits, Condiments, Medical and Poisonous plants, Perfume Producing Plants, Rubber and Resin Producing Plants, Dye Producing Plants, Fancy Woods, and Miscellaneous Useful Plants. Some specimens, of course, really belong in several different groups—the orange, for example, belongs with the edible fruits, the condiments, and the perfume producing plants. In such cases the specimen is placed according to its best known use.

The temperature here is too cool for some of the most interesting tropical plants of economic value. The melon-tree, which belongs in this house and is described in the following list, must be kept in the

Aeroid House; the coconut palm must be kept in the Warm House; the vanilla plant in the Fern House. Some plants, such as sugar cane and ginger, die down for several months of each year and must have especial care during their resting stage. Such plants are kept in the propagating houses for a part of each year. A number of plants that are among the most valuable of all economic plants—such as the olive, fig, pomegranate, and agave—thrive best when grown outdoors in the summer and kept in storage during the winter. Such plants are kept in the Bay House during the cooler part of the year. A few plants find the conditions here so trying that they must be frequently removed to the propagating houses for recuperation. Now and then an exhibition specimen dies, and its species is unrepresented until another specimen can be grown to exhibition size. In the main, however, the species described on the following pages are represented in this house the year round.

Aberia caffra, or KEI APPLE, belongs to the Flacourtiaceae, a family that has no local representatives. It is a native of Africa, where, because of its spiny growth, it is much used as a hedge plant. The fruit of the kei apple is highly valued for pickles and conserves. Efforts are being made to grow this species as a fruit tree in California and Florida

Aberia Gardneri is a native of Ceylon. This species is not so valuable as the preceding one; but its edible purplish fruit is of economic value in Ceylon and southern India.

Abrus precatorius, or CRAB'S-EYE VINE, or WEATHER-PLANT, belongs to the Leguminosae—the great family to which beans and peas and clover and wistaria and locust belong. The vine can be grown only in greenhouses here; but is hardy in our Gulf states. The roots furnish a poor substitute for licorice. The seeds are extremely poisonous; but are much used because of their striking appearance—they are bright scarlet with a black spot. In South American countries they are known as "paternoster beans," and are used for rosaries. In India they are also used for rosaries, as well as for a standard of weight. In the West Indies they are much used in bead work. The vine gets its name of "weather-plant" from the fact that it closes its leaves and "goes to sleep" during a storm.

Acacia. The acacias also belong to the Leguminosae. The genus comprises about 450 species. One species grows wild as far north as Kansas and Missouri. Several species can be grown as shade trees as far north as Philadelphia. The genus as a whole, however, is a tropical one, known for its quick growth and its incorruptible wood. The ancient Egyptians used acacia wood for making coffins for their kings. The shittim wood of which the Israelites built the ark and the tabernacle is generally held to have been acacia wood. The Conservatory has a collection of about 12 species, of which the following are of most general interest:

Acacia arabica, or GUM ARABIC TREE. Several species yield gum arabic, but this is the species known throughout India as the gum arabic tree. It is a native of Asia and Africa. The gum exudes from

the trees naturally, or is accelerated by making incisions in the stems and branches. The harvest lasts about six weeks, and during that time it is said the Moors live almost entirely on the gum. Six ounces of gum are said to be sufficient to support a man for 24 hours. Gum arabic forms an important article of export, and is used extensively in occidental countries for stiffening and giving luster to silk, crepe, and other fabrics.

Acacia armata, or KANGAROO THORN, is an excellent hedge tree. It will stand considerable drought, and has been found valuable in warm countries for reclaiming sand dunes.

Acacia decurrens, var. dealbata, or SILVER WATTLE, is a native of Australia, where it is highly valued as a street tree. Its bark is rich in tannin, and forms an important article of Australian export

Acacia Farnesiana, or POPINAC, is an American acacia that has been naturalized throughout the tropics. It has become a pest in Hawaii. The pods are rich in tannin. The flower heads are exceptionally fragrant and are used by the French in perfume making. In Italy the flowers are used in making the pomade known as "Cassie."

Acacia longifolia, or SYDNEY GOLDEN WATTLE, is used in Australia as a street tree. It furnishes a tannin especially valued in tanning heavy leathers.

Achras Sapota, or SAPODILLA, is a member of the Sapotaceae, the family to which the southern buckthorn of Illinois belongs. The sapodilla is a native of tropical America, but is now cultivated throughout the tropical and subtropical regions of the world. Its fruit, which is offered in the Florida markets, is about the size of an orange, and is sweet and delicious when ripe. An early Spanish writer described it as being the best of all fruits, combining the perfumes of "honey, jasmin, and lily-of-the-valley." The tree is evergreen, and yields a hard durable wood Timbers of it have been found in an excellent state of preservation in the ancient Mayan ruins of Yucatan. The bark yields a milky latex, known as chicle, which forms the basis of much of our chewing-gum.

Acocanthera spectabilis (*Acokanthera spectabilis*), or WINTER-SWEET, a native of Natal, belongs to the Apocynaceae, the family to which our common dogbane belongs. The winter-sweet, like most other members of the family, is poisonous. The flowers have the odor of jasmine, and are much used in perfume making. The plant is easily grown in California and Florida.

Adenanthera pavonina, or RED SANDALWOOD TREE, belongs to the Leguminosae, the family to which our locust tree belongs. This tree is a native of tropical Asia, where it grows to great size. It is highly valued for its timber. A red dye is obtained from it by rubbing the wood on wet stones. The bright red seeds, known as "Circassian seeds," are used in making necklaces. They are also used as a standard of weight by jewelers, each seed weighing 4 grains.

Afzelia bijuga also belongs to the Leguminosae. It is a native of

Africa and of the islands of the Pacific. It supplies the "ifit" used in Guam as a cabinet and construction wood.

Agave. The agave, a native of the hot desert regions of America, belongs to the Amaryllidaceae, the family to which the amaryllis belongs. About 325 species have been described, but the nomenclature is most confused. One species is native as far north as Maryland; but by far the greater number of species are found in Mexico. This collection numbers 20 species, and is a comparatively large one. The agave is grown in the United States chiefly for its decorative value; but it is one of the most useful of all plants in Mexico, where it supplies the natives with food, drink, fiber, soap, and razor strops. The species of most interest in this collection are the following:

Agave atrovirens, from which pulque and mescal are made. If the flower bud is cut out just before flowering, the plant will yield several gallons of sweet sap daily for some weeks. The fresh sap makes an excellent drink; fermented it produces pulque. Distilled pulque produces mescal—one of the most highly intoxicating drinks known. If the agave plant is not wanted for sap production, the leaves may be cut off, stripped of the outer fiber, placed on hot stones, and covered with grass. They will then soon become a sweet, jelly-like mass, much relished by the Indians.

Agave heteracantha, valuable for the fiber secured from the leaf covering.

Agave sisalana, which yields the sisal hemp used in cord and rope making. This species, because of its economic value, was introduced into Florida and the West Indies nearly a century ago. It has naturalized itself in many parts of the West Indies.

Agave americana, or CENTURY PLANT, or FALSE ALOE, is a widespread species. It is used in Mexico for hedges along railroads. It furnishes valuable fiber. The juice of the leaves will lather in water like soap. The flowering stems, when dried and cut in slices, form natural razor strops.

Aleurites moluccana, or CANDLEBERRY TREE, or CANDLE-NUT TREE, or VARNISH TREE, is a native of the Malay region that belongs to the Euphorbiaceae—a vast family to which belong the common snow-on-the-mountain, flowering spurge, castor-oil plant, and crotons. The candleberry tree is cultivated throughout the tropics for the oil secured from its seeds. This oil dries more quickly than linseed oil and affords a harder, more nearly waterproof surface. The seeds yield 60% oil. The oil is used for lighting and for food, as well as for varnish making. The tree is an excellent shade tree. The wood has timber value.

Allamanda cathartica, var. Hendersonii, or GOLDEN TRUMPET, belongs to the Apocynaceae, or Dogbane family. This native of Guiana is an exceptionally fine climbing plant, especially good for conservatory roofs. The flowers are a brilliant orange-yellow, twice the size of oleander flowers. A second species, *A. neriifolia,* is not so strong a climber as the golden trumpet, but is included in this collection because of its richly striped flowers.

Aloe. The aloes, which are chiefly natives of the Cape of Good Hope and the African Islands, belong to the Liliaceae, or Lily family. One species produces "bitter aloes." All species are credited with medicinal properties by some peoples. Due to this fact it has been found almost impossible to keep a display of aloes in the Economic House. Plants are stolen by those who have faith in their curative properties almost as soon as they are put on exhibition. The Conservatory has a half dozen species in the propagating houses—among them *Aloe vera*, from which "Barbados aloes" is derived. From time to time specimens are moved into the Economic House.

Anacardium occidentale, or CASHEW NUT, is a native of the West Indies that belongs to the Anacardiaceae, the family to which our common sumac and poison ivy belong. The cashew is a large tree, bearing fragrant rose-tinted flowers. The nuts are about the size and shape of a kidney bean. The shell contains an irritating substance. The kernel is edible, either raw or roasted, and yields an oil said to equal olive oil for culinary uses. The nut is borne on the end of a growth known as the cashew apple. The apple is eaten raw, or is used in making a wine-like drink. The gum of the tree is used in varnishes for protecting books and woodwork from white ants and other destructive insects.

Ananas sativus, or PINEAPPLE, a native of the American tropics, belongs to the Bromeliaceae, a family represented in our native flora only by the gray moss that hangs from the trees in our southern states. The family is a large one, chiefly tropical, and made up chiefly of plants that get their food from the air. A large collection of related species is to be found in the Warm House. The pineapple is one of the few members of the family that grows in earth and gets its food from the soil. The pineapple is now naturalized in the tropical regions of both hemispheres. It was introduced into England during the time of Charles II. Evelyn, in his "Diary," mentions tasting a pineapple from Barbados at the table of that monarch, and it is supposed that the top of that particular pineapple was planted, and from it other pineapple plants were grown. For several centuries pineapples were a favorite greenhouse product on large English estates, and the finest product was secured from plants grown from the tops cut off the fruit, and rooted in sand. Each pineapple plant produces one fruit, usually weighing a few ounces, but sometimes weighing as much as 20 pounds. Within the last few decades the growing of pineapples has become an important industry in Hawaii. At present most of our canned pineapple comes from Hawaii; most of the fresh fruit from Florida and the West Indies.

Andira inermis, or CABBAGE BARK TREE, is a native of the West Indies and Brazil that belongs to the Leguminosae, or Pulse family. Its bark is highly narcotic; but is a powerful anthelmintic, much used in medicine, along with Surinam bark, the bark from a closely related species.

Annona Cherimolia (*Anona Cherimolia*), or CHERIMOYA, a native of the Andes of Peru, belongs to the Anonaceae, a tropical family whose

only representative in temperate climates is our common papaw. The cherimoya has been naturalized in Mexico and Central America for centuries, and is now grown in practically all tropical and subtropical countries of the world. The fruit grown in the Madeira Islands is said to possess an unusually exquisite flavor, and the cultivation of the cherimoya is supplanting the cultivation of grapes there.

Annona glabra, or POND APPLE, or ALLIGATOR APPLE, or CORK-WOOD, has naturalized itself in the Everglades of Florida and in the swamps of many tropical lands. The fruit, which is supposed to contain a dangerous narcotic poison, is little eaten by man; but is much eaten by the iguana and similar animals. The roots of the tree furnish a light spongy wood that is much used as a substitute for cork.

Annona muricata, or SOURSOP, is cultivated throughout the tropics, where it is considered one of the most valuable of all fruit trees. The fruit, which resembles the mango, and has the odor of black currants, is often as large as a child's head. It may be eaten raw, or used for jellies, tarts, and preserves. The juice makes an excellent cooling drink. The leaves are used in making Jamacian bay rum.

Annona reticulata, or CUSTARD-APPLE, or BULLOCK'S-HEART, is a native of tropical America that is grown throughout the tropics. The fruit is shaped like a bullock's heart, and its pulp is the consistency of custard; hence its common names. The kernels of the seeds are said to be poisonous. The custard-apple fruit is inferior to that of the cherimoya and the soursop. This is a very different fruit from the delicious custard-apple of India, which is known as the sweetsop.

Antidesma Bunius, or SALAMANDER TREE, or CHINESE LAUREL, is an ornamental member of the Euphorbiaceae, or Spurge family. Its tough inner bark is much used in bast matting and cordage.

Antidesma venosum is a closely related African species recently introduced into our country by the Department of Agriculture.

Antigonon leptopus, or MOUNTAIN ROSE, belongs to the Polygonaceae, the family to which belong such weeds as black bindweed, and such ornamental vines as the silver lace vine. The mountain rose is one of the handsomest members of its family, bearing great racemes of handsome rose-pink flowers. It is popular in our southern states as a covering for fences, arbors, and verandahs.

Aralia spinosa, or ANGELICA TREE, or HERCULES' CLUB, is a native of the southern half of the United States that belongs to the Araliaceae, the family to which ginseng belongs. No other native tree has leaves of such size—the layman usually mistakes them for branches. New shoots will grow 15 to 20 feet in a summer. The tree is a favorite with landscape gardeners because of its foliage, its cloud of white flowers, and its wealth of purplish berries. The berries, bark, and fleshy roots are used medicinally, especially in home remedies. The bark is a reputed remedy for the bite of a rattlesnake.

Argania sideroxylon, or ARGAN OIL TREE, is a native of Morocco that belongs to the Sapotaceae, the family to which the sapodilla belongs. The fruit of the tree is the size of a plum, and is used for feeding cattle.

From the seeds the Moors extract "argan oil," which they use with their food.

Artocarpus integrifolia, or JACK FRUIT, is a native of the East Indies that belongs to the Moraceae, the family to which our mulberry belongs. The tree reaches a height of 30 feet and bears fruits weighing as much as 30 or 40 pounds, and very similar to the breadfruit. The fruit is eaten by coolies and natives. The seeds are boiled and eaten.

Asparagus plumosa is a native of the Old World that belongs to the Liliaceae, or Lily family. It is important in the florist's trade

Asparagus Sprengeri is a native of Natal that is much planted in tubs as an ornamental. Under favorable conditions it reaches a height of 6 feet. It matures an abundance of red berries about Christmas time, hence is especially valued by florists.

Averrhoa Carambola, or CARAMBOLA, belongs to the same family as our common oxalis—the Oxalidaceae. The tree reaches a height of 30 feet, and is extensively cultivated in India, China, California, and the West Indies. The fragrant yellow fruit, about the size of a hen's egg, is used for preserves. Half grown fruits are used for pickles. The trees are said to produce three crops a year.

Berria Ammonilla is a native of India, the Philippines, and the Malay region, that belongs to the Tiliaceae, the family to which our basswood belongs. Its wood is smooth-grained, yellow, with a dark red heart, and is much used for houses, boats, oil-casks, and the like.

Bertholletia excelsa, or BRAZIL-NUT, or CREAM-NUT, or NIGGER-TOE, is a native of the Amazon and Orinoco valleys that belongs to the Myrtaceae, a family with no local representatives. The trees reach a height of 100 to 150 feet. The nuts grow packed in heavy coverings that the Indians chop open. Tons of the nuts are annually shipped to our markets. The Indians express an oil from the nuts for burning The bark of the tree is used in caulking ships.

Bixa Orellana, or ANNATTO-TREE, belongs to the Bixaceae, a family with no local representatives. The tree is grown extensively in both the East Indies and the West Indies. The fruit pulp yields the dye that is commonly used by farmers' wives and others for coloring butter and cheese. It is also used in dyeing silk, in printing calico, and in coloring certain varnishes, plasters, and ointments. The natives of the Indies use it in a paint with which they cover their bodies to protect themselves from mosquito bites.

Blighia sapida, or AKEE TREE, is a native of Guinea that belongs to the Sapindaceae, the family to which belong our native soapberry and our horse-chestnut. The akee is naturalized in the West Indies and is cultivated in Florida. The tree bears showy, fragrant white flowers from which the native women distill a cosmetic. The fruit is the size of a goose's egg, is eaten raw or cooked, and is little inferior to a nectarine in flavor. The fruit also possesses some medicinal value—a remedy for diarrhea being made from it.

Bromelia Pinguin, or WILD PINEAPPLE, is a native of the West Indies and Brazil that belongs to the Bromeliaceae, or Pineapple family.

It reaches a height of 3 or 4 feet and is widely grown throughout the tropics for its decorative value, for its fiber, and for its fruit. The latter is about the size of a plum. A most cooling drink is made from it.

Brunfelsia americana belongs to the Solanaceae, the family to which the potato, tomato, petunia, and matrimony vine belong. This plant is grown in Florida for its fragrant white flowers.

Brunfelsia floribunda is a related species with rich violet flowers.

Bryophyllum pinnatum (*B. calycinum*), or SPROUTING LEAF, belongs to the Crassulaceae, the family to which the common hen-and-chickens belongs. If a leaf is cut off and placed on wet sand in a warm moist room, young plants will spring up in the notches along the edge of the leaf—whence its common name. The plant is used in medicine as a diuretic.

Buphane disticha, or CATTLE-DESTROYER, is a native of southern Africa that belongs to the Amaryllidaceae, or Amaryllis family. The leaves of the plant kill many cattle annually in its native regions. The bulbs furnish the poison that certain native tribes use for poisoning their arrows.

Caesalpinia sappan, or SAPPAN TREE, is a native of the East Indies that belongs to the Leguminosae, or Pulse family. The tree yields a red dye that forms an article of export.

Caesalpinia sepiara, of the same genus, is a scrambling shrub from India, valued as a hedge plant and as a source of dye-wood.

Caesalpinia Bonducella, or NICKER NUT VINE, of the same genus, is a climber found along tropical seacoasts. The seeds, or nuts, are used as necklaces and rosaries.

Cajanus indicus, or CONGO PEA, is a native of Africa that belongs to the Leguminosae, or Pulse family. The shrub is cultivated throughout the tropics for its seeds, which are used as food both for people and for live-stock.

Callistemon lanceolatus (*Metrosideros floribunda*), or BOTTLE-BRUSH, belongs to the Myrtaceae, a family with no local representatives. The tree is a native of Australia, but is widely grown in California as an ornamental tree. Its showy flower clusters look like bottle-brushes, whence the name. The wood is hard and heavy and is used for wheelwright's work and mallets.

Calophyllum inophyllum, or BITTER OIL TREE, is a large tropical tree that belongs to the Guttiferaceae, a family with no local representatives. It is much planted in the tropics as an ornamental shade tree. Its flowers are most fragrant. Its timber, which is durable and resembles mahogany in appearance, is used for shipbuilding, making canoes, and other purposes. The seeds yield bitter oil, or domba oil, valued as a remedy for bruises, rheumatism, and other ills, and used to some extent for lighting purposes. The tree bark exudes a gum-resin, one of the tacamahaca gums of commerce.

Canangum odoratum, or YLANGYLANG, is a native of India and the Pacific Islands that belongs to the Anonaceae, the family to which

our papaw belongs. The tree bears fragrant yellow flowers from which the ylangylang perfume of commerce is made. The manufacture of this perfume is an important industry in the Philippines. It takes about 150 to 200 pounds of flowers to yield a pound of oil. The flowers are also used in making "macassar oil"—a hair oil that was so popular a few decades ago that it became necessary to protect the backs of chairs and sofas with antimacassars. This tree furnishes the flowers with which the Samoan Islanders bedeck themselves.

Carica papaya, or SOUTH AMERICAN PAPAW, or MELON TREE, is a native of tropical America that belongs to the Passifloraceae, the family to which belongs our native passion flower, with its fruit known as Maypops. The melon-tree is a rapid-growing unbranched tree, rarely more than 20 feet in height. It is cultivated throughout the tropics, where it is regarded as one of the most important of all food sources. Its foliage is handsome enough to justify the fact that it is often grown as an ornamental—William Bartram, botanical explorer, wrote of it, in 1790: "This admirable tree is certainly the most beautiful of any vegetable production I know of." The fruit, which is melon-shaped, may weight as much as 15 pounds, and one tree produces from 20 to 50 fruits. The fruit is in season most of the year in the tropics, and stands shipment well—it is now shipped from Hawaii to our Pacific coast and marketed there. The pulp of the fruit looks and tastes like the most delicious muskmelon. It assists in the digestion of other foods, and so may be eaten in great quantity. The juice of the fruit furnishes the papain used in medicine and in making chewing-gum. This is the papaw exploited in certain patent medicines. Green fruits are cooked as vegetables. Negroes use the leaves as a substitute for soap in washing clothes. The leaves are also much used for making tough meat tender—tough meat wrapped in bruised carica leaves for a short time is said to become very tender.

Carissa bispinosa (*C. arduiana*) is an evergreen shrub that belongs to the Apocynaceae, or Dogbane family. Its fruits are eaten by natives of the tropics.

Carissa grandiflora, or NATAL PLUM, of the same genus, is a native of southern Africa, where it is highly prized as a hedge plant. Its red fruits, the size of plums, resemble cranberries in flavor, so that it is said to be difficult to distinguish between the flavor of sauce made from them and cranberry sauce. The shrub has been introduced into California and Florida.

Casimiroa edulis, or WHITE SAPOTE, is a native of Mexico that belongs to the Rutaceae, the family to which our prickly ash belongs. The tree is a large one, valued for its fruit, which is about the size of an orange and of a peach-like flavor. The fruit is said to have value as an aid in inducing sleep. The leaves are used medicinally.

Cassia. This is the genus of the Leguminosae to which our local wild senna and partridge pea belong. There are many species of cassia in existence, some yielding pods that are of value in medicine, in tanning, or in perfume making. The Economic House contains specimens representing 7 species, of which the most interesting are:

Cassia Fistula, or GOLDEN SHOWER, a tree from India which gets its name from its long racemes of golden flowers. This species, which furnishes the cassia pods used in medicine, has been widely introduced into the West Indies and other tropical sections. Senna leaves are from a closely related species.

Cassia grandis, or PINK SHOWER, a native of tropical America, with masses of pink flowers, planted as an ornamental.

Castilloa elastica, a native of Central America, belongs to the Moraceae, the family to which our mulberry belongs. The juice, secured by tapping the trees, thickens when exposed to the air, and becomes the raw rubber of commerce. This species has been extensively introduced into Ceylon, India, and other tropical countries.

Casuarina equisetifolia, or BEEFWOOD, is a native of the Old World tropics that belongs to the Casuarinaceae, a family with no local representatives. This quick-growing tree is grown for its odd appearance and for its timber value. Its very red wood is hard and durable. The tree is much used in warm climates to hold the sands of seacoasts. The collection includes, also, four related species.

Catha edulis, or ARABIAN TEA, is an evergreen shrub from Arabia that belongs to the Celastraceae, the family to which our climbing bitter-sweet belongs. The leaves, which possess sustaining and recuperative properties, are chewed by the Arabs or made into tea.

Cecropia palmata is a member of the Moraceae, the family to which our mulberry belongs. It is of especial interest to scientists because of the relation that exists between it and the ants that live in its hollow stems.

Cedrella odorata, or WEST INDIAN CEDAR, is a native of the West Indies that belongs to the Meliaceae, the family to which mahogany belongs. The species grows to be a handsome large tree, valued as a shade tree and as a source of the cedar wood of commerce—wood much used in furniture making and in making cigar boxes.

Ceratonia Siliqua, or CAROB, or ST. JOHN'S BREAD, is a native of the Mediterranean region that belongs to the Leguminosae, or Pulse family. This is one of the most important economic plants in existence, and our Government is much interested in having it established in the United States. It does well in California, and could be grown throughout our southern states. The tree is a handsome one that resembles the honey locust in appearance. One tree may bear as many as 450 pounds of pods each year. It is claimed the carob tree produces more food material per acre than the best alfalfa. The pods are eaten by both man and beast. They form an important ingredient in many patent cattle foods, and are today an important export of Palestine, Syria, and Cyrus. They are used as the chief food for cattle and swine in many lands. They are the "husks" upon which the prodigal son dined—not such poor fare, according to the notions of the children who buy them at the drugstores as sweets. They are supposed to be the "locusts" that St. John lived on in the wilderness, hence the name of St. John's Bread. The pods have some use in the manu-

facture of syrups and fermented drinks. The seeds furnished the original carat weight of goldsmiths.

Chalca exotica (Murraya exotica), or ORANGE JESSAMINE, is a native of India, China, and Polynesia that belongs to the Rutaceae, the family to which our prickly ash belongs. The wood is valued because of its strength, durability, and beautiful yellow color. The bark is used as a cosmetic. The fragrant flowers, resembling miniature orange blossoms, are used in perfume making.

Chiococca racemosa, or SNOWBERRY, or WHITE QUININE, is a native of tropical America that belongs to the Rubiaceae, the family to which coffee and cinchona belong. The shrub is valued for its panicles of whitish flowers and its white berries. The root is reputed to be a remedy for snakebite. A variety of quinine is reputed to be derived from the bark.

Chorisia insignis, or FLOSS SILK TREE, is a native of South America that belongs to the Bombacaceae, a family with no local representatives. The silky cotton from the pods is used for filling cushions and pillows.

Chrysophyllum Cainito, or STAR-APPLE, is a native of the West Indies and Central America that belongs to the Sapotaceae, the family to which the sapodilla belongs. The handsome, large, evergreen tree is widely grown for ornament, and for its delicious, apple-like fruit.

Cinchona Ledgeriana, or PERUVIAN BARK, is a native of Peru that belongs to the Rubiaceae, the family to which coffee belongs. The bark of the trunk and roots yields quinine, which is so widely used in treating malaria. The tree is a small one. It yields the best bark when from 6 to 9 years old. The tree is widely cultivated in the tropics. The bark of commerce comes chiefly from Java, India, Jamaica, New Zealand, and Australia.

Cinchona succirubra, or RED CINCHONA, yields a greater amount of quinine than the better known Peruvian Bark.

Cinnamomum Camphora, or CAMPHOR TREE, is a native of China and Japan that belongs to the Lauraceae, the family to which our sassafras belongs. The camphor tree has been a favorite roadside tree in California for some time, and has proved hardy in Florida. The young growth is very ornamental. The wood is used in the production of camphor gum.

Cinnamomum Cassia, or CASSIA-BARK, is a related species from China that has been widely introduced into tropical and subtropical countries. It yields the valuable cassia-bark used in medicine. A third species, not yet represented in this collection, yields the cinnamon bark of commerce.

Citrus. The citrus trees belong to the Rutaceae, the family to which our prickly ash belongs. They are beautiful evergreen trees that are natives of Asia and Malaya, and are widely grown throughout tropical and subtropical countries. The growing of citrus fruits has long been an important industry in California and Florida. The specimens in this house and in the Bay House represent 11 species, including lemon

trees, lime trees, grapefruit trees, kumquat trees, and the trees that yield the sour oranges, mandarin oranges, and satsuma oranges of commerce. These trees bloom well in the Conservatory, and sometimes set as many as 300 to 400 fruits; but the fruits rarely mature because visitors pull them off as curiosities.

Clerodendron. The collection includes two species of this beautiful vine, a tropical member of the Verbenaceae, the family to which the vervain of our fields and the verbena of our gardens belong.

Clusia sp., or BALSAM TREE, belongs to the Guttiferae, a family with no local representatives. The specimen in this collection was grown from a sprig found in a collection of orchids. The resin of the tree is burned as incense in Roman Catholic churches in Spanish American countries.

Coccoloba floridana (*C. laurifolia*), or PIGEON PLUM, is a native of tropical America that belongs to the Polygonaceae, the family to which buckwheat belongs. The pigeon plum produces edible fruit.

Coccoloba uvifera, or SEASIDE GRAPE, is a related species from the same region. The tree is grown for its beautiful foliage, as well as for its edible fruit, its bark, and its wood. The bark is used in tanning leather. The wood is used as a cabinet wood and a dyewood.

Cocculus laurifolius, or FISH BERRY TREE, is an evergreen shrub from the Himalayas that belongs to the Menispermaceae, the family to which our moonseed vine belongs. The shrub is grown for its decorative foliage and for its poisonous fruits, which are used by the natives of India in fishing. They drop the berries into the water. The fish eating the berries become stupefied and are easily caught by hand. The "cocculus indicus" of commerce is from a related species.

Cocos nucifera, or COCONUT PALM, is one of the most useful of all palms. Its nativity is in dispute. It is found growing along the sea coasts of all tropical lands, and is one of the first trees to appear on coral islands. It is claimed that the heavy covering of the nut protects it against the action of salt water, and so makes it possible for the nuts to germinate and grow after they have been carried long distances by ocean currents and ocean storms. Darwin and other scientists dispute this claim, and maintain the nuts are soon injured by salt water, and that germination rarely occurs unless the nuts are planted.

Virtually all parts of the tree are used in some way. It is said 70 trees will support a family. The hard, close-grained wood, known as porcupine-wood, takes a high polish, and is used for many purposes. The leaves are used for thatch, mats, screens, baskets, etc. The midribs of the dried leaves are used for forks, knitting needles, toothpicks, etc. The pith of the young palm is eaten as a vegetable, as is also the terminal bud, or cabbage. The root possesses narcotic properties, and pieces of it are chewed instead of betel nut when the latter cannot be secured. The hard shell of the nut is made into cups and all sorts of household utensils, and is also used as fuel. The husk of the fruit, known as coir, is made into yarn, ropes, brushes, brooms,

floor-matting, and the like. It is also used for caulking boats and as a stuffing fiber. The dried kernel, known as copra, is the most important article of commerce in the South Sea Islands. It is exported by millions of pounds to Europe and the United States, where it is used in making stearin candles and soap. The best grades of coconut oil, expressed from the dried kernel, furnish a butter substitute. The dried kernel also furnishes the desiccated coconut so much used in candy and cake making. The kernel of both ripe and unripe nuts is eaten by the natives. The milk of the unripe nut is used as a beverage by the natives—in some islands it supplies their only drink. The opening flowerstalk, if tapped, yields about a quart of toddy per day. The toddy is used fresh as a drink; is fermented into a drink known as tuba; or is boiled down to yield a sugar known as jaggery. Distilled tuba yields arrack and vino. The toddy is sometimes used in making vinegar.

Cocos Datil, a coconut palm from Argentina, produces an edible fruit that resembles the fruit of the date palm.

Cocos eriospatha is one of the hardiest of all the coconut palms. It produces an edible fruit that has the flavor of apricot. Its handsome bluish fronds make this a popular ornamental tree.

Coffea arabica, or COFFEE, is a native of Abyssinia that belongs to the Rubiaceae, the family to which our bedstraw, bluet, buttonbush, and partridge berry belong. From Abyssinia, coffee is supposed to have been introduced into Arabia during the fifteenth century. It was first used in London by a Smyrna merchant, who, in order to have it made properly, took with him to London a Levantine girl. This girl later married his coachman, and together they opened the first coffee shop in London, in 1652. The Dutch planted coffee in Java in 1696. It died out and was replanted in 1706. One of the plants grown by the Dutch in their botanic garden at Amsterdam was presented to Louis XIV. He sent the plant to Martinique, and from there coffee culture spread through the West Indies. Coffee growing ceased to be profitable in the West Indies when slavery was abolished there, and the culture shifted to Brazil, where slavery then existed. At the present time Brazil supplies about three-fourths of the world's coffee.

There are many different varieties of coffee grown. The flavor of the bean, which is roasted to yield the coffee of our shops, varies with the variety and with the locality in which the tree is grown. Mocha, Java, and Pointed Bourbon have always been held to be among the best of all varieties. Coffee culture in Java, Ceylon, Sumatra, and India has been handicapped for the last half century by the presence of a most destructive fungus disease that has so far, apparently, not attacked the trees of Brazil. Most coffee grown in those countries today is grown on trees grafted on *Coffea Liberica*.

The coffee trees in the Conservatory usually bloom in the spring, bearing flowers with the odor of jasmine; and mature their fruit about Christmas time.

Coffea Zanguebariae (*C. Zanzibariensis*) also produces coffee; but is not important in commerce.

Cola acuminata, or COLA NUT, is a native of Africa that belongs to the Sterculiaceae, a family with no local representatives. The cola tree is grown throughout the tropics for the stimulating cola nuts—a nut about the size and shape of a horse chestnut, and of a bitter flavor. The trade in this nut is immense. The natives claim that chewing it gives strength, stays hunger, allays thirst, and enables them to do an excessive amount of work. The nuts are used in the United States in medicinal preparations and in summer drinks.

Coulteria tinctoria, is a tropical member of the Leguminosae, of value in dyeing.

Crescentia Cujete, or CALABASH TREE, is a native of tropical America that belongs to the Bignoniaceae, the family to which our catalpa belongs. The fruit can be caused to grow in various shapes by skillful tying, and is used for water gourds and other household utensils. The tree is becoming increasingly important in the manufacture of tobacco pipes.

Croton sylvatica, belongs to the Euphorbiaceae, the family to which our garden snow-on-the-mountain, and flowering spurge belong. From this plant is secured a croton oil used as a substitute for the croton oil of India.

Cryptostegia grandiflora is a native of India that belongs to the Asclepiadaceae, the family to which our common milkweed belongs. It is widely cultivated in warm countries for its ornamental, pinkish flowers. The juice, when exposed to the sun, produces caoutchouc, or India rubber.

Cryptostegia madagascariensis is a related species from Madagascar.

Cycas revoluta, or SAGO PALM, is a native of China and Japan that belongs to the Cycadaceae, other members of which are exhibited in the Fern House. The pith of the stem yields a variety of sago that is much esteemed in the many tropical countries in which the plant is now cultivated.

Cymbopogon citratus (*Andropogon citratus*), or LEMON GRASS, is an oil-producing grass from the Old World. The oil from this and from several other species is known as citronella oil by druggists, or as oil of verbena by perfumers. It is used in mosquito deterrents and in perfume.

Cyperus Papyrus, or EGYPTIAN PAPER REED, is perhaps the most useful member of the Sedge family. Under favorable conditions it attains a height of 10 feet. Slender stalks are woven into boxes and baskets. The ancients used bundles of the thicker stalks for making light boats. They used the fiber for cordage, sails, awnings, and matting. They boiled the pith and ate it as food. They dried the root and used it as fuel. Their most important use of it, however, was in the making of a paper known as papyrus. This was made by cutting the pith into strips, pressing the strips into sheets, and drying. Such paper was known at least 3600 B. C.

Dalbergia Sissoo, or SISSOO TREE, a quick-growing native of India, belongs to the Leguminosae, the family to which clover and locust

belong. It has great value in improving sterile lands, and is widely cultivated in all frostless countries. Its wood takes a high polish and does not warp or split. It is used wherever strength, elasticity, and durability are required—especially in boat building.

Dillenia indica, a native of India and the Malayan region, belongs to the Dilleniaceae, a family with no local relatives. The tree, a large one, bears an edible fruit about the size of an apple. The natives of India use it in making curries, jellies, and cooling drinks. The wood is hard, and used for gun-stocks, and the like. The species has been introduced into California and Florida.

Diplandenia Brearleyana, a lovely flowering vine from tropical America, belongs to the Apocynaceae, or Dogbane family.

Dombeya natalensis, a small, quick-growing tree from Natal, belongs to the Sterculiaceae, a family with no local representatives. The tree is cultivated in both Florida and California for its large, fragrant white flowers. Four other species of *Dombeya* are to be found in the Conservatory—two in this room and two in the Palm House.

Duranta Plumieri, or GOLDEN DEWDROP, a native of the West Indies and nearby tropical countries, belongs to the Verbenaceae, the family to which vervain and verbena belong. The golden dewdrop is a small tree, bearing edible golden yellow fruit.

Elaeodendron australe, or OLIVE-WOOD, a native of Australia, is a large tree that belongs to the Celastraceae, the family to which our waahoo and our climbing bittersweet belong. The tree is prized for its ornamental, holly-like foliage, and its hard white wood, which is adapted for fancy and cabinet work.

Entada scandens, or SCIMITAR PODS, a native of the West Indies and many tropical lands, belongs to the Leguminosae, or Pulse family. The vine produces seed pods that are 4 to 8 feet in length. The seeds themselves are two inches in diameter. They are split to form snuff and toy boxes, and are used in making many other trinkets.

Eriodendron anfractuosum (*Ceiba Caesearia*, or *Xylon pentandrum*), or SILK COTTON TREE, or CEIBA, or KAPOK TREE, belongs to the Bombacaceae, a family with no local representatives. This majestic tree is found in all tropical lands and is a characteristic tree of tropical countries. Its appearance is so imposing that the untutored negroes call it the God Tree, and cannot be induced to cut it down. It is valued as a shade tree. Its soft wood is used in interior construction. The cotton-like material of its seed pods is the kapok of commerce, and is widely used in filling mattresses, pillows, and life-buoys.

Eriobotrya japonica, or LOQUAT, is a small evergreen tree that belongs to the Rosaceae, the family to which our rose, hawthorn, apple, pear, and cherry belong. The loquat is a native of Japan, where more than 46 different varieties of it are known, and where more than 20,000,000 pounds of the fruit are grown annually. The loquat has been introduced into our southern states, and will grow as far north as Philadelphia, if given some winter protection. The pear-shaped fruits have an agreeable flavor, and are eaten raw, or made into pies, jams,

jellies, preserves, and the like. The large seeds give an agreeable flavor to tarts. The fruit is often sold in northern markets. The largest loquat tree in this collection is kept outside during the summer and in the Bay House during the winter.

Erythroxylon Coca, a native of New Grenada and Bolivia, belongs to the Erythroxylaceae, a family with no local representatives. Cocaine is derived from the leaves of this plant. Between 30 and 40 million pounds of leaves are harvested in South America alone each year. It is grown on a commercial scale in Java and Ceylon, as well as in South America. The leaves are gathered when fully grown, dried in the sun, and then either kept for home consumption or else shipped to markets where the cocaine is extracted from them. The natives chew the leaves with a bit of unslaked lime. The effect is highly stimulating, and enables the natives to perform feats of great endurance with little food. The leaves are mixed with the forage of mules when long trips are to be undertaken. The Indians are supposed to have been familiar with the anaesthetic properties of coca leaves during the earliest times, and it is supposed that patients chewed the leaves before undergoing trepanning and other surgical operations. The cocaine extracted from the leaves is held to be second only to opium and its derivatives as a maker of drug addicts.

Eucalyptus. The Eucalyptus or gum trees are natives of Australia and the Malayan region, and belong to the Myrtaceae, a family with no local representatives. The trees reach immense size—one giant tree in Australia being the world's tallest tree. The eucalyptus is grown for ornament as well as for its economic value. Oils used in perfumery and in medicine are produced from its leaves. Many species yield a valuable gum. The wood is hard and durable and is replacing oak and hickory for many purposes. It takes a good polish and furniture made from the species known as blue-gum cannot be told from mahogany by its appearance, provided it is well stained. Eucalyptus has become a most popular tree in California and our southwestern states. Eucalyptus leaves have the ability to transpire tremendous quantities of moisture, hence the trees are much used to reclaim swampy land when there is no other means of drainage. They have rendered permanently habitable the formerly miasmatic Pontine Marshes near Rome, and wide miasmatic tracts in Algeria, India, and other sections of the world. This collection includes specimens representing 11 species.

Eugenia. The eugenias belong to the Myrtaceae, the family to which the eucalyptus belongs. The best known member of the genus is:

Eugenia caryophyllata, whose unopened flower buds, when dried, form the cloves of commerce. This collection includes six species, of which the following are perhaps the most interesting:

Eugenia jambolana (*Syzygium jambolana*), or JAMBOLAN PLUM, a native of the East Indies. It bears an edible fruit about the size of a plum. Its wood is hard and durable. Its bark is used in tanning.

Eugenia Jambos, or ROSE APPLE, is a related species from the East Indies, known for its beauty of flower, fruit, and foliage. The fruit,

about the size and shape of an apricot, is fragrant and edible. It has the flavor of roses, and is valued in jelly and preserve making, and in confectionery. In the Conservatory the fruit ripens in September.

Eugenia Malaccensis, or LARGE-FRUITED ROSE APPLE, or MALAY APPLE, is a related species from Polynesia. The tree is a handsome one, bearing quantities of scarlet flowers, followed by quince-shaped fruit with the smell and flavor of apple. The natives call the tree Kavika, and hold it in veneration as the symbol of all that is lovely and beautiful.

Eugenia uniflora, or SURINAM CHERRY, is a related species from Brazil that has been successfully introduced into California and Florida. It produces berries that resemble tiny tomatoes. It is much grown as an ornamental pot plant. The berries are edible, of a spicy flavor, and much esteemed in jelly-making.

Fatsia papyrifera (*Aralia papyrifera*, or *Tetropanax papyrifera*), or RICE-PAPER TREE, is a native of Formosa that belongs to the Araliaceae, the family to which our wild sarsaparilla belongs. The plant rarely exceeds 10 feet in height. In California it is valued as an ornamental shrub—it is easily grown, a half-inch of root will grow and produce a good plant in one season. The pith of the stem is used by the Chinese for making a delicate lovely substance known as rice paper. Upon the rice paper they paint exquisite small pictures. Cheaper grades of the paper are used in manufacturing artificial flowers. Until 1850 scientists were at a loss as to the nature of rice paper, the Chinese having guarded carefully the secret of its source.

Feijoa Sellowiana, or PINEAPPLE GUAVA, is a native of South America that belongs to the Myrtaceae, the family to which the eucalyptus and eugenia belong. It is much grown in France, Italy, California, and other countries of similar climates. It reaches a height of about 15 feet. The fruit has the flavor of pineapple, and is most delicious when thoroughly ripe. It is eaten raw, made into jelly or jam, or crystallized as a confection. The fruit can be shipped for a long distance. In the Conservatory this species blooms in February, bearing great masses of showy flowers with henna stamens.

Ficus. This genus, which includes more than 600 species, scattered throughout the warmer regions of the world, belongs to the Moraceae, the family to which our mulberry belongs. The genus includes the edible fig, the creeping fig, the India rubber plant, and the banyan tree. Excellent specimens of the creeping fig and the rubber plants are to be seen in the Palm House. Large specimens of the fruiting fig are to be found outside the main entrance of the Conservatory in the summer and in the Bay House in the winter. Smaller specimens are on exhibition here, and a brief description of the plant follows:

Ficus Carica, or FIG, appears to be a native of the region around Smyrna, but has been cultivated since the most remote times, and has established itself throughout the Mediterranean region. During the days of the Greeks and Romans, figs were the chief food of slaves. They are still a most important article of commerce. Many different varieties of figs are grown. Several varieties are hardy in our southern

states as far north as Memphis. A variety known as the "Mission fig" has been grown in California ever since the days of the early Spanish settlements. The cultivation in California of the type of fig known as Smyrna fig is one of the most interesting romances of horticulture. For years the Californians had grown excellent trees but poor fruit; then scientists discovered that the fig must be fertilized by certain tiny insects that lived inside the fruit of wild figs. The wild fig and the insects were imported into the country, and the California orchards now produce an excellent grade of Smyrna figs. One wild tree supports enough insects to fertilize the figs of 100 cultivated trees.

Gardenia jasminoides, or CAPE JASMINE, belongs to the Rubiaceae, the family to which coffee belongs. It is much grown in the South for hedges. Its waxy, camellia-like flowers are used in perfume making.

Gelsemium sempervirens, or CAROLINA YELLOW JASMINE, or FALSE JASMINE, is an evergreen twining shrub from our southern states that belongs to the Loganiaceae. Its yellow flowers are very fragrant. The roots and rhizomes are used medicinally as a nervine, antispasmodic, and sedative.

Genipa americana, or GENIP-FRUIT, is a native of the West Indies that belongs to the Rubiaceae, the family to which coffee belongs. The tree bears fruit the size of an orange, and of a pleasant flavor. It is much used in making marmalade and a preserve known as "genipaps."

Grevillea robusta, or SILK OAK, a native of Australia, belongs to the Proteaceae, a family with no local representatives. The silk oak is a very tall, rapid-growing tree that has proved popular in California and Florida as a street tree. With us the fern-leaved young plants are sold as ornamental pot plants. The tree bears great trusses of golden flowers that are rich in honey. The elastic and durable wood is much valued for cask staves and furniture.

Guaiacum officinale, or LIGNUM-VITAE TREE, a native of the West Indies and parts of tropical America, belongs to the Zygophyllaceae, the family to which the caltrop of Illinois belongs. The wood of lignum-vitae cannot be split, and because of its hardness, density, and durability is much valued for pulleys, machinery bearing, pestles, and the like. The wood was taken back to Spain by the early explorers who were interested in its medicinal value. Decoctions of the wood were used in treating gout, stone, palsy, leprosy, dropsy, epilepsy, and syphilis. The wood was long supposed to furnish a specific for the last named disease. During the 9 years following the introduction of the wood into Spain, it was claimed that at least 3,000 people had been restored to health by it. Chips of lignum-vitae heartwood are today used in standard medicinal preparations, as are also the bark and the guaiacum gum—the latter secured by making incisions in the tree.

Haematoxylon campechianum, or LOGWOOD, a native of Mexico, Central America, and the West Indies, belongs to the Leguminosae, the

family to which locust and acacia belong. It is sometimes called "Campeachy wood" because it is especially abundant around the Bay of Campeachy. The tree rarely exceeds 45 feet in height. The wood is much used in dyeing cotton cloth, silk, wook, and leather, but is especially valued in dyeing black silks and black woolen goods. The coal tar dyes have superseded many of the dyewoods, but not logwoods Logwood chips may be used with various acids and salts to produce a wide range of colors, including blue, purple, violet, dark reds, light reds, green, and black. Both the extract and the decoction of logwood are used in medicine.

Hamelia patens, or SCARLET BUSH, or SCARLET POISON, or RAT POISON, is a shrub from tropical America that belongs to the Rubiaceae, the family to which coffee belongs. It is valued as an ornamental shrub because of its purplish leaves and orange-red flowers.

Hevea brasiliensis, or PARA RUBBER TREE, or CAOUTCHOUC TREE, a native of the Amazon region, belongs to the Euphorbiaceae, the family to which our flowering spurge belongs. This tree, which reaches a height of 60 feet in 8 years, is the chief source of Para rubber. It begins yielding when a few years old. A 6 year old tree will yield about a pound of rubber a year; an older tree will yield more. Rubber is made from the milky sap which exudes when incisions are made in the tree. The sap thickens upon exposure to the air. A coating of the thickened sap is laid on clay moulds which are suspended over slow fires. When the first coat is dry a second is added, and so on, until the required thickness is obtained. When the drying is completed, the mass is removed from the mould, and is the raw rubber of commerce. For many years after the substance was first introduced into Europe by the early Spanish explorers, its only use was in rubbing out pencil marks from paper; hence its name of "rubber." It was in 1842 that it was discovered that rubber possessed the power of absorbing sulphur, and it is since that discovery that rubber has come to be one of the most important vegetable products known to man.

Hibiscus. The collection includes 7 species, of which the following are the most interesting:

Hibiscus elatus, or MOUNTAIN MAHOE, or CUBA BAST, a small tree from the West Indies, belongs to the Malvaceae, the family to which our mallows belong. The flowers are very ornamental, of a primrose yellow, changing to orange and deep red. The durable wood has timber value. The fiber, known as Cuba bast, is used for tying cigars, etc.

Hibiscus tiliaceus (*Paritium tiliaceue*), or BOLA, or MOHAUNT, is a related species found throughout the tropics. It is one of the most abundant trees in the South Sea Islands, where it is valued for its ornamental large yellow flowers. The light, tough, durable wood is used for many purposes. The porous bark is made into cordage and matting, or is eaten by the natives when food is scarce.

Hibiscus Rosa-sinensis, or CHINESE HIBISCUS, is a related species that is a native of China. The large, bright rose-red flowers are the

characteristic flower of the tropics. In some places the flowers are used for dyeing hair and eyebrows and for blacking shoes.

Hura crepitans, or SANDBOX TREE, or MONKEY DINNER-BELL, a native of tropical America, belongs to the Euphorbiaceae, the family to which flowering spurge belongs. The tree reaches a height of 100 feet and is grown as an ornamental tree in many tropical and subtropical countries. The fruit is a woody capsule the size of a large apple, and before the days of blotting paper was used in the West Indies as a sandbox for pouring sand on letters; hence the name of sandbox tree. When the capsules ripen on the tree, they explode most noisily, throwing the seeds a great distance. The seeds are a violent, drastic purgative. The milky juice of the tree is exceedingly poisonous when taken internally, and has been known to cause fatal injury to the eyes when brought into contact with them.

Hymenaea Courbaril, a native of the region from the West Indies to Brazil, belongs to the Leguminosae, the family to which our locust tree belongs. This species is an evergreen tree that reaches a height of 80 feet, and a diameter of 9 feet. Individual specimens are known that are supposed to be at least 1000 years old. It yields a fragrant, amber-like resin known as courbaril, or American copal. This copal is used in making varnishes and lacquers. The fossil copal found buried in various sections is also used in making varnishes; but it is widely used, too, in making such articles as are commonly made of amber. The heavy, hard, close-grained wood of the tree is used for wheelwork, tree-nails, beams, and machine parts. The sweetish pulp of the pods is eaten by the Indians.

Ilex paraguariensis, or MATE, a native of Paraguay and parts of Brazil, belongs to the Aquifoliaceae, the family to which our holly belongs. Mate is a shrub that reaches a height of 15 to 20 feet. So far as is known, it is not cultivated, the entire supply of leaves being secured from the dense thickets of wild plants. The plant could soon be exterminated if it were carelessly picked. As it is, leaves are picked only from fully grown trees, and the same tree is picked only at long intervals. Collectors go into the forest with machetes and cut off branches 4 to 5 feet in length. They build bonfires and swing each branch through the fire at once until the leaves are singed—otherwise the flavor would be lost. The branches are then carried to a central camp and dried by skilled Indians, as much of the flavor depends upon the drying. The final preparation of the product for market is carried on in factories. Mate is extensively used in South America and in Italy, where returned workers from the Brazilian coffee plantations have introduced it. It was comparatively unknown in the United States before the World War; but is now an important import. The taste for mate must be acquired; but once the mate habit is acquired, it is said to be much harder to break than the tea habit.

Illicium anisatum, or STAR ANISE, a native of China, is a small tree that belongs to the Magnoliaceae, the family to which our magnolia and tulip tree belong. This is generally understood to be the tree from which the star anise of commerce is secured, although there is some

dispute about the matter. All the star anise of commerce comes from China, and it has always been difficult to secure accurate information about the sources of products from that country. Star anise is a small star-shaped cluster of fruits with the odor and flavor of anise. It is much used in oriental cookery. It is imported by Europe for flavoring spirits, particularly French wines, and for use in medicine.

Inga laurina, a native of Peru, is a tree belonging to the Leguminosae, the family to which our locust tree belongs. The sweet edible pulp of the pods is eaten by the natives.

Jacaranda ovalifolia (*J. mimosaefolia*), or GREEN IVORY WOOD, a native of Brazil, is a large tree belonging to the Bignoniaceae, the family to which our trumpet creeper and catalpa belong. It bears great panicles of from 40 to 90 large blue flowers, and is considered one of the best flowering trees for warm countries. It is much planted as an ornamental and street tree in both Florida and California. The wood is used in cabinet work.

Jasminum, or JASMINE, or JESSAMINE, belongs to the Oleaceae, the family to which our ash, lilac, and fringe-tree belong. There are over 200 species of jasmine found in the warm countries of the world, but chiefly in the Eastern Hemisphere. The flowers are famed for their fragrance. Several species are used in the making of perfume. This collection includes 9 species.

Jatropha Curcas, or FRENCH PHYSIC NUT, belongs to the same genus as our spurge nettle. The plant is a small tree, a native of tropial America, and extensively cultivated there for the oil which is extracted from the seeds. This oil is used in cooking, in soap making, and in medicine. The nut is supposed to contain a poisonous principle; but is said to be eaten in Mexico as peanuts are here.

Jatropha podagrica, or GUATEMALA RHUBARB, is a closely related species that is also known as physic nut.

Laurus nobilis, or SWEET BAY TREE, a small tree that is a native of the Mediterranean region, belongs to the Lauraceae, the family to which our sassafras and spice bush belong. The ancients held the tree sacred to Apollo, and crowned their heroes with wreaths made of the leaves of this tree. This is the laurel of literature and history; but is chiefly used today as a tub plant. The leaves are now used in cookery and in making confectionery. The Conservatory has more than two dozen handsome specimens, which are grouped about the entrances in the summer and are kept in the Bay House during the cooler months.

Lawsonia inermis, var. alba, or HENNA, or CAMPHIRE, a native of Africa and Asia, belongs to the Lytheraceae, the family to which our loosestrife belongs. It is known is some sections as reseda or Egyptian privet. It is grown in California and Florida as an ornamental shrub. In the West Indies, where it is known as "mignonette," it has naturalized itself. The leaves yield the henna or alhenna of the Arabs (the cyprus of the ancients). This henna was much used by the ancients, and is still used in Egpyt and elsewhere, for coloring women's nails and

dyeing men's beards. The flowers are used in perfume making. This is the camphire of the authorized version of the Bible, and, according to legend, was extensively used in Solomon's harem.

Litchi chinensis, or LITCHI FRUIT, belongs to the Sapindaceae, the family to which the soapberry tree belongs. Until recently the horse-chestnut and buckeye were included in the same family. The litchi tree is a native of China and has been cultivated since the most remote times. The tree has been introduced into most of the tropical and sub-tropical regions of the world, where it is grown extensively for its fruit. The litchi was planted in Florida in 1886. It has bloomed there but has not ripened fruit. A litchi tree ripened fruit in California for the first time in 1914. The fruits are borne in clusters of 3 to 20. They are deep rose in color when ripe, and are said to have the flavor of a Royal Anne cherry. They are considered as delicious as any fruit in existence. Many different varieties are grown, with varying flavors. The fruits are dried and shipped to many occidental countries, but especially to sections where Chinese have emigrated. The dried fruit has the flavor of raisins. The fruits are also preserved in syrup and exported by the Chinese.

Lucuma mammosa, or MARMALADE FRUIT, belongs to the Sapotaceae, to which our southern buckthorn belongs. The lucuma grows to be a tree 30 to 100 feet in height. It is probably a native of Central America, but is widely cultivated throughout the adjoining countries. It is a common fruit in Cuba and can be grown in Florida. The fruit has a sweet flavored flesh, about the consistency of cantaloupe, and salmon in color. It makes a delicious sherbet, and is much used in making guava cheese. It stands shipment to northern markets, and is exported to some extent. The ground seeds are used in Costa Rica to make a delicious confection. They are also roasted and ground and added to chocolate to give it a better flavor.

Macadamia ternifolia, or QUEENSLAND NUT, or AUSTRALIAN CHESTNUT is a member of the Proteaceae, a family with no local representatives. This tall tree is a native of Queensland and New South Wales. It is cultivated to a small extent in Florida, California, and Cuba. It grows very slowly. The evergreen foliage, however, is so ornamental as to make the tree worth planting as a decorative species. The close-grained, reddish wood is of value in cabinet making. The nuts are about an inch in diameter, and have the flavor of Brazil nuts.

Malpighia glabra or BARBADOS CHERRY, is a member of the Malpighiaceae, a family with no local representatives. The Barbados Cherry is a shrub that reaches a height of 6 feet. It bears rose-red flowers, followed by red fruit the size of cherries, which is used for jams and preserves. The shrub is widely planted throughout the tropics for its fruit. It is a native of the West Indies.

Mangifera indica, or MANGO, belongs to the Anacardiaceae, the family to which our poison ivy belongs. The tree is probably a native of the Himalayan foothills, but it is cultivated in all warm climates, including Florida and California. It has been in cultivation for at least 4,000 years, perhaps longer. The tree is more important in the

tropics than the apple is with us. There are many varieties of mango in cultivation, and the fruit varies in size from the size of a plum to fruit weighing 4 or 5 pounds apiece. The flavor also varies greatly. The skin of the fruit is yellow or scarlet; the aroma is tempting and spicy; the flesh is yellow and juicy, with a flavor between that of an apricot and a pineapple. Akbar, the great emperor of the sixteenth century, planted a grove of 100,000 mango trees, some of which are still standing. In some regions o the world the flowers are used in religious ceremonies, and celebrations are held in honor of the tree.

Manihot Glaziovia, or CEARA RUBBER TREE, a native of Brazil, belongs to the Euphorbiaceae, or Spurge family. The tree is naturalized in many tropical countries. It grows rapidly, and reaches a height of 40 feet. It is the chief source of Ceara rubber. A tree 4 years old will, under favorable conditions, yield a full crop of rubber.

Manihot utilitissima, or CASSAVA, is a related species from which is secured the tapioca of commerce. The large fleshy roots contain a poisonous principle that is removed by washing in water. The roots are reduced to a pulp, which is mixed with water. The fine starch settles to the bottom of the vessel. The water is poured off and the starch is dropped on hot plates, where stirring causes it to form into round pellets, or the pearl form of commerce.

Melia Azedarach, or CHINA-TREE, or CHINA-BERRY, is a member of the Meliaceae, the family to which mahogany belongs. The tree is a native of the Himalayan region, but is now widely cultivated and has naturalized itself throughout our southern states, as well as in many other sections of the world. It is a beautiful shade tree, with fragrant lilac flowers, and yellow berries that are eaten by birds and cattle. In some countries the seeds are used for making rosaries. The wood is coarse, but durable and handsomely marked, and is valuable for cabinet making. In Australia the tree is known as white cedar, and the wood is used for many purposes. The leaves, flowers, and fruit are all reputed to have medicinal qualities. The tree is not to be confused with the soapberry, which is also called China tree in the South.

Melicocca bijuga, or GENIP TREE, or SPANISH LIME, is a member of the Sapindaceae, to which the soapberry and litchi belong. The tree is a native of Central America, cultivated in Florida and California, and naturalized in the West Indies. The fruit, which is sometimes known as honeyberry, is the size of a plum, green or yellow in color, and with the flavor of grapes. It is eaten uncooked. The seeds are sometimes roasted like chestnuts. The fruit is also known as Jamaica bullace plum.

Moringa oleifera (*M. pterygosperma*), or HORSE RADISH TREE, belongs to the Moringaceae, a family with no local representatives. The tree, which grows to a height of 25 feet, is a native of India, but is naturalized in the West Indies, and in parts of the United States. It bears showy, fragrant, whitish flowers, followed by pods a foot to a foot and a half long. The seeds are known as ben-nuts, and yield an oil used

in the arts. The roots is pungent, with the flavor of horse radish, and is sometimes eaten as a condiment.

Morinda citrifolia, or INDIAN MULBERRY, belongs to the Rubiaceae, the family to which coffee belongs. The morinda is a small tree, a native of India and Malaya. The flowers contain a red coloring principle; the roots a yellow one. The fruits are fleshy and of a yellow color.

Muehlenbeckia platyclada (Coccoloba platyclada), or RIBBON-BUSH, a native of the Solomon Isles, belongs to the Polygonaceae, the family to which buckwheat belongs. The shrub is extensively planted for its showy fruit, and its unusual leaf structure.

Nandina domestica, a native of China and Japan, belongs to the Berberidaceae, the family to which the barberry belongs. This pretty shrub is much planted in temple gardens and is grown in practically every Japanese garden.

Myrtus communis, or MYRTLE, is also a member of the Myrtaceae. This is the classic myrtle, a native of southern Europe. Wreaths of myrtle were worn in ancient times by magistrates and victors. The wood is hard. Both green and dried fruits are used as condiments. The leaves are astringent and yield a volatile oil used as a stimulant by the ancients. The berries also are used medicinally in Greece and India. The plant has value in perfume making. The bark is used in tanning leather. The twigs are used in certain orthodox Jewish services, and the Conservatory frequently receives requests from synagogues for unbranched twigs with the leaves arranged 3 in a whorl. Large specimens are kept outdoors in the summer and in the Bay House in the winter.

Nephelium Longana, or LONGAN, belongs to the Sapindaceae, the family to which the litchi belongs. The longan is a native of India, now grown in Florida and California. The fruit resembles the fruit of the litchi, but is of smaller size and inferior flavor. Quantities of the fruit are sold in China each year. In this country the longan is valued as a possible stock on which to graft the litchi.

Nerium Oleander, or OLEANDER, belongs to the Apocynaceae, or Dogbane family. The oleander is a native of the Orient, mentioned in Biblical literature. It is hardy outdoors in the South; but is grown as a houseplant in the northern part of the country. It is a poisonous plant,—people have died from eating the flowers and cattle have been killed by eating the foliage. Even water in which the plant stands is poisonous, if taken internally. Large specimens of oleanders are kept outdoors during the summer and in the Bay House during the winter.

Olea europaea, or OLIVE, is a member of the Oleaceae, a family to which our native ash belongs. The olive is probably a native of Asia Minor, but has been cultivated since remote times in many warm countries. It is grown commercially in California, Florida, and Arizona. Both the ripe and the green fruit are pickled. Dried olives are much used in some countries. Oil pressed from the ripe fruit is

used as a food. Oil pressed from fermented fruit, and known as Gallipoli oil, is used in dyeing. The wood is used in cabinet work. Trees are in existence that are more than 1000 years old. Large specimens are kept outdoors in the summer and in the Bay House in the winter.

Oxyanthus natalensis, belongs to the Rubiaceae, the family to which coffee belongs. The small trees are natives of Natal, but are cultivated in Florida for their fragrant white flowers which are used in the making of perfume.

Pachira insignis, a native of Mexico, belongs to the Bombacaceae, a family with no local representatives. The tree is much cultivated in the West Indies and in Venezula for its showy flowers, its large fruits, and its edible seeds, which are of the size and flavor of chestnuts. This collection also contains a related species, of less economic value, whose chief interest lies in the fact that the seed pods explode noisily and scatter seeds to a great distance.

Parkia timoriana, or CUPANG, belongs to the Leguminosae, or Pulse family. It is a very large tree, reaching a height of 115 feet. Its small, fern-like leaves make it a most attractive shade tree. It is a native of Timor and the Philippine Islands, and has been recently introduced into the United States by the Department of Agriculture.

Passiflora, or PASSION-FLOWER, belongs to the Passifloraceae. One species, bearing fruits known as maypops, is a native of all the southeastern part of the United States. The Conservatory has seven species of the genus in its collection, all evergreen climbers, grown for their showy flowers. Of these the most interesting are probably the two following:

Passiflora edulis, or GRANADILLA, or PASSION-FRUIT. The fruit of this species, which is a native of Brazil, is about the size of a hen's egg, and is dull purple in color. It is used in sherbets, cake icings, confectionery, jams, etc. It is also eaten uncooked with sugar or is made into a cooling drink. It is much esteemed in Queensland and New South Wales where it is cultivated commercially, and where profits of from $100 to $300 per acre are reported from its culture.

Passiflora laurifolia, or WATER-LEMON, or JAMAICA HONEYSUCKLE, which is a native of the West Indies. This vine also bears an edible fruit.

Persea gratissima, or ALLIGATOR PEAR, or AVOCADO, belongs to the Lauraceae, the family to which sassafras belongs. The tree grows wild in the West Indies, Brazil, Peru, and Mexico. It is cultivated on a commercial scale in California, Florida, and other warm parts of America. The fruit, which varies in color, in thickness of skin, in flavor, and in size, is occasionally seen in northern markets. Small fruits weigh but a few ounces; large ones may weigh 3 to 4 pounds. The favorite variety has a fruit about the size and shape of a Kieffer pear, with a soft, oily, yellow pulp. The flavor is peculiar, but those who learn to like it become very fond of it. The fruit is usually eaten as a salad, dressed with vinegar, salt, and pepper. The vegetable oil present makes the fruit unusually valuable as a food, rather than a dessert. Oil expressed from the fruit is used in soap making and for

lighting. The seeds yield a black dye that is converted into an indelible ink. The wood is ornamental, and of value in inlay work and interior finishing.

Pereskia. The pereskias belong to the Cactaceae, and are interesting as being leaf bearing cacti. They are natives of tropical America. The collection includes 3 species, of which the most interesting is probably the following:

Pereskia aculeata, or BARBADOS GOOSEBERRY. The Barbados gooseberry is a climber with beautiful flowers, blooming in the Conservatory in the spring. The flowers are followed by an edible fruit about the size of an olive.

Phormium tenax, or NEW ZEALAND FLAX, is a member of the Liliaceae or Lily family. It is a native of New Zealand, grown here for ornament; but grown there for its fiber value.

Phyllanthus. This genus is a member of the Euphorbiaceae, or Spurge family. The collection includes 3 species and varieties from the tropics, of which the most interesting is:

Phyllanthus Emblica, or EMBLIC. This is a small tree from tropical Asia, whose fruit is much used both raw and preserved. The foliage is handsome and makes the tree a most ornamental one. Both the bark and leaves are rich in tannin.

Phytolacca dioica belongs to the Phytolacceae. This is the same genus to which our common pokeweed belongs. This species is a large evergreen tree from South America. It is of value for ornament and for shade, and is planted as an ornamental shade tree in California.

Pimenta officinalis, or ALLSPICE, is a member of the Myrtaceae, a family with no local representatives. This tree is a native of tropical America, but is most cultivated in Jamaica, whence we secure most of the allspice of commerce. The spice is the aromatic berry, which is supposed to combine the flavor of cinnamon, nutmeg, and cloves, whence the name.

Piper, or PEPPER, is a member of the Piperaceae, whose only local representative is the Lizard's Tail of our marshes. The family is a large one, comprising some 600 to 700 species, found chiefly in the tropics. Many species are used in their home regions to yield intoxicating or masticatory products, or are used in medicine. This collection includes 6 species, from Japan, Borneo, Peru, Africa, and the West Indies, all of which are of economic value in their own lands.

Pistacia Lentiscus belongs to the Anacardiaceae, the family to which our sumac and poison ivy belong. This small evergreen tree is closely related to the species which produces pistachio nuts. It is a native of the Mediterranean coasts. It yields mastic gum, secured by making transverse incisions in the bark of the tree. The gum is much used by Turkish and Arab women to whiten their teeth and perfume their breath. The oil pressed from the seeds is used for food and for lighting. The flexible young twigs are used in basket making.

Pithecolobium dulce, or MANILLA TAMARIND, or INGA, belongs to the

Leguminosae, the family to which our locust belongs. This tree is a native of the Philippine Islands. It is grown extensively in the tropics as an ornamental tree—it makes a large stately tree with heads of white flowers. The pulpy portion of the fruit is eaten by the poorer natives. The bark yields a yellow dye. The collection also includes another species of the same genus.

Pittosporum undulatum, or MOCK ORANGE, or VICTORIAN BOX, or IVORY WOOD, a native of Australia, belongs to the Pittosporaceae, a family with no local representatives. The species grows to be a large tree, but is often kept pruned as a shrub. In some sections it is preferred to box as a hedge plant. It is used as an avenue tree in southern California. It is often planted near dining room windows because of the orange-blossom fragrance of the flowers. It produces a hard, beautiful, and light-colored wood, of value in cabinet work.

Pittosporum Tobira, or TOBIRA, is a native of China and Japan. It is a winter-flowering shrub, bearing fragrant whitish flowers that resemble orange flowers. It withstands violent saline winds unusually well and is much favored as a shrub along sea coasts. The variegated form, which is also in the collection, is used in the East as a house plant.

Plumeria acutifolia, or FRANGIPANI, is a member of the Apocynaceae, to which our dogbane belongs. The frangipani is a native of Mexico, but is cultivated in all tropical countries for its fragrant white flowers, which vie in fragrance with the jessamine and tuberose. The trees are in bloom the year round, bearing great clusters of waxy white flowers, as many as 20 flowers to the cluster. The tree is known in some sections of the tropics as the temple-flower, or graveyard-flower. The common name is supposed to come from an Italian nobleman named Frangipani who lived in the Middle Ages. He compounded a perfume of many ingredients, and gave it his name. These flowers are supposed to have the exact odor of the perfume.

Podocarpus macrophylla, or GIANT YEW, is a member of the Taxaceae, the family to which our American yew belongs. The giant yew is a native of Japan, where it often grows to a height of 50 feet. It is a valuable timber tree. The collection contains two other species of the same genus.

Pogostemon Heyneanus (*P. Patchouly*), or PATCHOULI PLANT, is a member of the Labiatae, the family to which our mints belong. The Patchouli is an herb from India and Burma. It is grown for perfume in India, where it is one of the favorite perfumes. In the days when Indian shawls were fashionable, this perfume was most fashionable in our country, for its presence was held to be a sure test of a genuine Indian shawl. In the 1850's the French manufacturers of imitation Indian shawls began importing patchouli to scent their imitation shawls, and since that time the perfume has ceased to be fashionable here.

Poinciana regia, or ROYAL POINCIANA, is a member of the Leguminosae, the family to which our locust belongs. The tree is a native of Madagascar, but is now planted in all frostless countries of the world. It

is one of the most striking and gorgeous of all tropical trees, especially when covered with scarlet flowers. It is very rapid growing.

Psidium Araca, or BRAZILIAN GUAVA, is a member of the Myrtaceae, the family to which allspice belongs. This guava is a native of Brazil. It bears a yellow fruit, very sweet and delicious when fully ripe.

Psidium Cattleianum, or STRAWBERRY GUAVA, is another species of the same genus. It is a native of Brazil, but widely cultivated elsewhere. It is cultivated in both California and Florida where its fruit is much used in jelly making. The fruits are about the size of a large strawberry and the flavor is likened to that of the strawberry.

Psidium guianense is a guava from Cayenne.

Psidium molle, or SOUR GUAVA, is a native of Mexico and Central America. It fruits prolifically, bearing edible yellowish fruits.

Punica Granatum, or POMEGRANATE, is a member of the Punicaceae, a family with no local representatives. It is a native of Persia and India, but is cultivated in most tropical and subtropical countries. In the United States it is hardy as far north as Washington and Baltimore. It blooms freely here, and occasionally ripens fruit. It is a small tree with showy flowers, and is in bloom both summer and winter. It is a popular hedge plant in the South. The shrub was supposed to have been introduced into southern Europe by the Carthaginians, whence the name "Punicus." The pomegranate is mentioned in the Bible. According to Greek mythology it was the eating of the pulp of a pomegranate seed that kept Proserpine from being restored to her mother, Ceres, for more than half of each year. Pliny considered the pomegranate the most valuable of all fruits both as to beauty and as to medicinal value. The fruit can be kept for weeks and is occasionally seen in our northern markets. A cooling drink is made from the pulp of the seeds. The pulp of the fruit is eaten. The bark of the root is employed in medicine. The rind of the fruit furnishes a remedy for tenia, and a jet black writing ink is also made from it. The finest morocco leather is said to be tanned with the rind. In India a seedless variety is much cultivated.

Quisqualis indica, or RANGOON CREEPER, or WHAT IS IT?, is a member of the Combretaceae, a family with no local representatives. The plant is a native of Malaya. Various explanations are given for the name. One is that the flowers are scarlet one day and white the next, and the man who named it was perplexed as to the color. The other is that it grows as a shrub until it reaches a height of three feet, then sends up a new shoot that climbs any nearby tree, and the original shrub then perishes, so that the discoverer was amazed at such conduct and exclaimed, "Who? What?" of its behavior, and the exclamation became its name.

Russellia juncea, or CORAL PLANT, is a member of the Scrophulariaceae, the family to which our toadflax and mullein belong. The plant is a native of Mexico, and is popular for hanging baskets.

Saccharum officinarum, or SUGAR CANE, a native of Asia, belongs to the Gramineae, the family to which grass and corn belong. The

specimens shown here are grown in the propagating houses from cuttings and are brought in here after they have attained a good size. Sugar cane is never seen growing wild. It was under cultivation when Alexander the Great invaded Hindustan, and is today cultivated in every tropical or subtropical land, where it can be assured freedom from winds and plenty of rain. The cane lives for about 7 years, and a plantation is harvested for 7 years, and then replanted. The cane is cut just after it blooms, is carried to factories, is ground up and heated almost to the boiling point, with a little lime added. The impurities are then removed, and the remainder evaporated by heat to a thick syrup. After this it passes through many processes, whose end products are crude sugar and New Orleans molasses. The sugar is later refined in great refineries. The great sugar producing centers are now Java, Porto Rico, Hawaii, and Cuba. A fair amount is produced in Louisiana, and other Gulf States.

Sacred Tulsi, an unidentified plant from India, was brought back by a returning traveller who knew it only as "Sacred Tulsi." The plant has never bloomed nor fruited in the conservatory, and no one has ever been able to get any clew as to its identity.

Sapindus Mukerossi, or SOAPBERRY TREE, belongs to the Sapindaceae, the family to which the common horse-chestnut belongs. The tree is a native of tropical Asia. The ornamental berries contain a high percentage of saponin, and a fully grown tree may yield from 60 to 120 pounds of berries a year. The fruit was used as a cleansing agent in oriental countries before the introduction of soap and is still preferred in those countries for washing the hair and for cleansing delicate fabrics such as silk and cashmere shawls.

Sapindus Saponaria, or SOAPBERRY, is a related species that is a native of Florida and tropical America. The early explorers wrote of it as bearing "sope berries like a musket ball that washeth as white as sope."

Sapium sebiferum (*Stillingia sebifera*), or CHINESE TALLOW TREE, is a member of the Euphorbiaceae, or Spurge family. It is a native of China, but is cultivated in many tropical lands. It is a small tree, with poisonous sap, grown for the waxy covering of the seed, which is used for candles, soap, and cloth-dressing; and for its timber value.

Sansevieria, or BOWSTRING HEMP, belongs to the Liliaceae, or Lily family. The plants are grown for their ornamental foliage and lovely flowers, but are of economic value for their fiber. The collection includes 4 species, from India and Africa.

Schinus dependens, is a member of the Anacardiaceae, the family to which sumac belongs. The schinus is a small tree native to South America. It bears berries which are used medicinally in Argentina.

Schinus Molle, or PEPPER TREE, or PERUVIAN MASTIC-TREE, is a related species from tropical America. The tree is evergreen and reaches a height of 50 feet. It bears beautiful rose-colored berries, the size of peppercorns, whence the name pepper tree. It is much valued in California as an avenue tree, Los Angeles in particular having wonderful

avenues of the tree. It is, however, very susceptible to black scale, hence is indirectly a serious menace to the citrous orchards and has been cut down recently by the thousands where it grew near orange orchards.

Schizolobium excelsum, is a member of the Leguminosae, or Pulse family. The tree reaches a height of 120 feet, and is valued for its fern-like foliage and large panicles of yellow flowers. It is a native of Brazil.

Solandra magnifica, is a showy vine from tropical America. It is a member of the Solanaceae, the family to which our common matrimony vine belongs.

Solanum Capsicastrum, is a shrub from Brazil and Uruguay belonging to the same family as the above species.

Solanum jasminoides, or POTATO-VINE, is a popular greenhouse climber. It is a member of the same genus as the preceding and is likewise a native of tropical America. It bears pretty white flowers, tinged with blue.

Solanum Seaforthianum, is another vine from Brazil, belonging to the same genus. It bears blue flowers and showy scarlet berries.

Sorinda madagascariensis, or GRAPE MANGO, a large tree that is a native of tropical America, belongs to the Anacardiaceae, the family to which our poison ivy belongs. It is extensively cultivated in tropical Asia, and has been introduced into the United States. It is valued for its sweet fruit, about the size of a sparrow's egg. In the Conservatory the tree blooms freely, but has never yet ripened fruit.

Sparhodea campanulata, a large evergreen tree from Africa, belongs to the Bignoniaceae, the family to which our catalpa belongs. It is valued for its wealth of showy scarlet flowers.

Sparmannia africana, or AFRICAN HEMP TREE, belongs to the Tiliaceae, a tropical family whose only northern representative is the basswood, or linden. This is one of the finest white-flowered plants in existence. No viburnum, hydrangea, or similar shrub can compare with it during its blooming season. During the rest of the year it looks like a clump of basswood suckers. It is valued both for its ornamental value and for the hemp fiber it produces.

Stenotaphrum secundatum variegatum, or ST. AUGUSTINE GRASS, is a grass native to Florida. It is one of the most valuable lawn grasses in the south. The variegated form is much used for hanging baskets.

Stephanotis floribunda, is a member of the Asclepiadaceae, the family to which our milkweed belongs. This is an excellent greenhouse climber from Madagascar. It bears masses of fragrant waxy white flowers that are good for cutting.

Sterculia alata belongs to the Sterculiaceae, a family with no local representatives. The plant is a native of India, where it grows to be a large tree. It bears showy flowers and is valued as a lawn tree.

Sterculia acerifolia, or FLAME TREE, is a related species from Australia.

It is an evergreen tree that reaches a height of 60 feet. It bears trusses of showy scarlet flowers, and is much used for streets and lawns in California. Its wood is valued in cabinet work.

Strychnos Nux-vomica, or NUX-VOMICA, is a member of the Loganiaceae, the family to which our Indian pink belongs. The small tree is a native of India. Its fruit resembles an orange, with a hard rind and many seeds. The pulp is harmless; but the seeds contain the poisons nux-vomica and strychnine, both valuable in medicine. The bark and root yield native remedies for snakebite and fevers.

Swietenia Mahogani, or MAHOGANY, is a member of the Meliaceae, the family to which the China berry belongs. This huge evergreen tree reaches finest development in Central America and the West Indies. It yields the durable, beautifully grained wood so much used in fine furniture making.

Tamarindus indica, or TAMARIND, a native of tropical Africa, belongs to the Leguminosae, the family to which the locust and honey locust belong. The tamarind is an evergreen tree that reaches a height of 80 feet. It is cultivated in many tropical countries, both for its ornamental value and for its fruit, which is an important article of commerce in some countries. The pulp of the fruit is used in chutnies and curries and for pickling fish. The fruit preserved in sugar is the preserved tamarind of the confectioner's. A cooling drink is made from the pulp. The fruit also yields a medicinal property. It is claimed that the leaves of the tree falling on a cloth tent in wet weather will decompose the cloth in a day or two.

Taraktogenos Kurzii, or CHAULMOOGRA TREE, belongs to the Flacourtiaceae, a family with no local representatives. This tree is a native of Burma, and attempts to cultivate it are now being made by the United States and by the British Government. Its seeds yield the chaulmoogra oil that is believed to cure leprosy, and that it is hoped will give great relief to tuberculosis sufferers. The plants in this collection were grown by the government from seed brought back by J. F. Rock, the government plant explorer who found the native home of the tree, after much search.

Tecoma capensis, or CAPE HONEYSUCKLE, a native of tropical America, belongs to the Bignoniaceae, the family to which our catalpa belongs. Its showy flowers are of value in perfume making.

Tectona grandis, or TEAK, a native of India and Malaya, belongs to the Verbenaceae, the family to which our garden verbena belongs. The hard, durable wood is much used in ship-building, in making railway carriages, and in cabinet work. The leaves yield a red dye. An oil called teak-wood oil is extracted and used for varnishing and polishing wood. The Indian teak-forests are under Government protection.

Terminalia Catappa, or TROPICAL ALMOND, or MYROBALAN, is a member of the Combretaceae, a family with no local representatives. This tree is a tall stately one that grows to a height of 80 feet. It is a native of the Andaman Islands, but is extensively cultivated throughout the tropics as a street and ornamental tree. The nuts have the flavor

of almonds and are much relished by the natives. They yield an oil esembling almond oil. The tasar silkworm is said to be fed on its leaves. It is a popular street tree in Florida. The collection also includes another species whose fruits are valuable in dyeing and tanning.

Thea sinensis, or TEA, a native of China and India, belongs to the Ternstroemiaceae, the family to which the camellia belongs. The tea plant reaches a height of 20 feet in the wild state, but under cultivation is kept pruned to 3 or 4 feet. The flowers look like single white roses, and have the fragrance of roses. Tea cultivation was introduced into China about 350, and taken to Japan in the 9th century by two Chinese priests. Tea is cultivated now in China, Korea, Japan, and as far south as the Malay peninsula. Attempts have been made to grow it in Africa, the West Indies, Bengal, Carolina, and many other warm countries. The plant will grow, but the leaves lack the true aroma. For good tea the plant must be grown rapidly and must be kept pruned so it will send up quantities of small new branches. For the better grades of tea, only the terminal bud and the upper leaf of each shoot is picked; for medium grade, the bud and two leaves; for cheap grades, the bud and three leaves. Picking tea requires expert workmen who must be able to snip off the twig with the thumb and forefinger. After picking, tea leaves may be treated in two ways. One way produces green tea; the other black. Green tea requires the smaller amount of work—the leaves are dried in trays over a slow fire for a couple of hours, then run through rollers. For black tea, the leaves are dried by exposure to the air, then run through rollers, then spread out under damp cloths and allowed to ferment, then rolled again, and then dried. Different terms are used in different countries to designate different grades of tea. The very best grade of tea is never seen in this country, and is said to sell for something like $250 a pound in China.

Theobroma Cacao, or CACAO, a native of tropical America, belongs to the Sterculiaceae, a family with no local representatives. This tree bears, on the trunk and branches, pods that contain the cacao beans from which chocolate and cocoa are made. As many as 40 varieties of cacao are cultivated, different varieties varying widely in flavor. The plant grows in shade in the forest, and artificial shade must be supplied the young plants in cultivation. Usually the shade is supplied by such crops as cotton, manioc, and bananas. For the grown trees, shade is usually supplied by planting coral-trees between the rows. Cacao cultivation requires much waiting and expense. A fair crop is never secured until 10 years after a plantation is set out. A large tree bears as many as 400 pods. The fruit is edible, but is valued for the seeds, about 60 to the pod. The seeds are removed from the pod and taken at once to factories where they are fermented and sweated to remove the flesh that adheres to them. Later the beans are dried and prepared for market. The beans lack their flavor until they are roasted. After roasting, they are crushed, and the shells removed. From the kernel, or cocoa nibs, the cocoa, chocolate, and cocoa butter of commerce are prepared.

Thespesia populnea, is a member of the Malvaceae, or Mallow family.

This is a common tree of tropical sea coasts, native to tropics of the eastern hemisphere. It reaches a height of 40 feet, and blooms all year. The inner bark yields a fiber; the wood is durable and useful.

Thevetia nereifolia, or YELLOW OLEANDER, is a member of the Apocynaceae, the family to which our dogbane belongs. This is a shrub from Mexico and the West Indies, widely cultivated in Florida as an ornamental shrub. The flowers are fragrant and resemble the oleander. The fruit is considered poisonous. The sap, also, is said to be poisonous.

Trachelospermum jasminoides, or STAR JASMINE, or CONFEDERATE JASMINE, is another member of the Apocynaceae. This is a climbing evergreen from China, much grown outdoors in our southern states for its fragrant, star-shaped flowers.

Trichilia undulatifolia, or BUTTERWOOD TREE, belongs to the Meliaceae, the family to which mahogany belongs. The butterwood tree is valued for its wood.

Triphasia trifolia (*T. aurantiola*), or LIME-BERRY TREE, belongs to the Rutaceae, and is distantly related to the orange. The native country is unknown, but the tree is widely cultivated throughout the tropics as an ornamental tree. The fruit, shaped and colored like cranberries, is used in making marmalade. The lime-berry will grow in soil too salty for the other citrous fruits, and is being tested as a stock on which to graft oranges and lemons.

Urginea Scilla (*U. maritima*), or SQUILL, or SEA ONION, belongs to the Liliaceae. The sea onion is a native of the Mediterranean region, where it is highly valued for its medicinal properties. It is collected in great quantities for the drug trade. Bulbs sometimes attain a weight of 15 pounds. They contain 22% sugar, and are used in Sicily in the manufacture of whiskey. It is said that bulbs placed on a shelf in an Italian home will, without either earth or water, produce spikes of flowers, lasting in perfection for weeks.

Vangueria infausta belongs to the Rubiaceae, the family to which coffee belongs. It is a shrub, native to tropical Africa, bearing an edible berry. The collection also includes the species *edulis*.

Vanilla planifolia, or VANILLA, belongs to the Orchidaceae, or Orchid family. This plant belongs in the economic house, but cannot be kept here because of the temperature. It is kept in the Fern House. The collection includes 4 species of vanilla; but the one named is the species from which most of the vanilla of commerce is secured. There are comparatively few places where the vanilla plant can be cultivated and in many of those the beans are of inferior flavor. The Aztec Indians were found using vanilla when the Spanish conquered Mexico. Vanilla is still an important product of Mexico, and is also grown in Java and Tahaiti—although that grown in the latter country has an inferior flavor and is used chiefly in perfume making. The United States uses more vanilla than all the rest of the world put together. Vanillin, a chemical product with a similar flavor, is used to help supply the demand. Genuine vanilla, made from the pods, or "beans" of

the vanilla plant, is a most expensive product. The vanilla crop is always altogether inadequate to the demand.

Zingiber officinale, or GINGER, belongs to the Zingiberaceae, a tropical family without local representatives. Ginger was known to the Hindus before the Christian era, and was prized by the ancient Greeks and Romans. Attempts are now being made to grow ginger commercially in California and Florida. The plants are not known to produce seeds, and are propagated by planting rootstocks. When the plant dies down at the end of the rainy seson, the rootstock, which is often a foot long, and much knotted and crooked, is dug up, washed, and prepared for market in one of three ways. (1) Roots boiled 15 minutes and then dried. This produces black ginger. (2) Roots peeled, washed in cold water, and dried. This produces the commonly known white ginger. (3) Roots boiled until soft, peeled, boiled again in thick syrup, then dried. This produces preserved ginger. The chief crops of commercial ginger are grown in India and Jamaica.

The Warm House

THIS house is used for exhibiting tropical plants that have colored or variegated foliage. The plantations are not permanent ones, but are varied somewhat from time to time. From November to June much space is given over to the display of Codiaeums, or crotons. From middle June to middle September there is a great display of Caladiums.

The temperature and the humidity in this room are the highest maintained anywhere in the Conservatory. Most of the plants in this house, like those in the Aeroid House, take the greater part of their nourishment from the air by means of aerial roots. In their native lands they grow chiefly on trees. Here they are grown in pots of fiber, or on sticks that have been wrapped with sphagnum moss and saturated with plant food. Very rew of them are potted in earth. The "curtain vine" that grows on the rafters has no roots that take food from soil. Its food is taken in through the feeding roots that form a curtain across the house, roots from 20 to 30 feet long.

Many of the species in this house belong to the Aeroid, the Lily, and the Aralia families. The greater number, however, belong to the Bromeliaceae, the family to which the pineapple of commerce belongs. The only member of this family native to our part of the world is the so-called "Spanish moss" or "long moss" that forms hanging tufts on the branches of trees in the southern part of the country. The common pineapple is one of the very few members of the family that get their food from the soil—practically all the other species are epiphytic in habit.

Many visitors ask whether the plants in this house can be grown as house plants in the home. Very few of them can be so grown.

The Warm House.

Many of them are so difficult to grow that even plant fanciers rarely succeed in developing presentable specimens. Many of the specimens shown here cannot be duplicated anywhere in the country. The collections exhibited here are among the most valuable owned by the Conservatory.

One collection that never fails to excite interest is the collection of Nepenthes, or pitcher plants, from India and other oriental countries. These insectivorous plants hang over a pool in the center of the room as in their native home, and daily catch great numbers of tropical roaches, flies, and other insects. This is one of the best collections of pitcher plants in the country, and contains between 75 and 100 specimens, representing 18 species and varieties.

Outside the collection of pitcher plants and the collection of fruiting pineapples, the chief interest of the collections shown in this house is in the foliage. The characteristics that give the plants their value are obvious to the visitor; consequently only a very few of the hundreds of species here represented are listed for comment. Among the species that may gain interest from some brief description are the following:

Aechmea, represented here by several species, is a genus of the Bromeliaceae. The flowers show a most beautiful and unusual combination of colors—orange, lavendar, pink, white, and yellow, all in the same flower cluster. The most noteworthy species in the collection is *Mariae-Reginae*, which has most showily colored leaf bracts.

Begonia. The begonias belong to the Begoniaceae, a family of plants found in all the warm countries of the world. The begonia was first introduced into England in 1777, and has since become a most popular house plant among English-speaking peoples. The Conservatory has a collection of 40 species and varieties, the most delicate of which are kept in this room.

Bignonia. The bignonia that grows locally is the cross-vine. Representatives of 10 tropical species are grown in the Conservatory. All are excellent vines that bloom profusely. Most of them are grown in this room, because they require a great amount of warmth.

Codiaeum, or CROTON, or VARIEGATED LAUREL, a native of the islands of the Pacific and the Malay peninsula, belongs to the Euphorbiaceae, the family to which our flowering spurge belongs. The foliage shows a great variety of shades of green, yellow, red, orange, pink, and crimson. This collection is an unusually good one, including representatives of nearly 40 species and varieties.

Cocos nucifera, or COCONUT PALM, is a plant that belongs in the Economic House and is described with its contents, but that requires a warmer temperature than the one maintained there.

Cordyline. The cordylines belong to the Liliaceae, or Lily family, and resemble dracaenas in appearance. Their leaves are brilliantly colored, usually in shades of pink, orange, and scarlet. This collection is a large one, containing representatives of more than 20 species and varieties, collected from the East Indies, Australia, Tropical Asia, Brazil, and New Zealand.

Dracaena. The dracaenas also belong to the Lily family. All are natives of tropical countries. This collection includes representatives of 20 species and varieties, among them the tree form that may reach a height of 60 feet and live for many centuries. The larger specimens are grown in the Palm House and are described under that heading.

Dioscorea, is a genus of the Dioscoreaceae, the family to which our wild yam belongs, that has been cultivated since prehistoric times for its edible rootstocks. The genus is represented here by 2 species.

Dichorisandra mosaica is a member of the Commelinaceae, or Wandering Jew family, that is valued both for its foliage and for its rich purple flowers which greatly resemble the flowers of the Tradescantia of our gardens and woods.

Elaeis guineensis, or Oil Palm, is a palm from western Africa that will not stand the temperature in the Palm House, and so is grown here. It is of exceedingly slow growth. Its flowers have the odor of anise. Its fruits, red in color, and borne in large clusters, yield the palm oil of commerce. The fresh oil is eaten like butter. Palm oil is an important African export, much used in making soap and candles. The kernel of the nut yields palm-nut oil.

Hyophorbe Vershaffeltii and *Hyophorbe amaricaulis* are palms from Mauritius that, like the preceding species, will not stand the temperature of the Palm House, and so must be grown here. Both are exceptionally ornamental species.

Medinilla magnifica, an evergreen shrub from the Philippines, belongs to the Melastomaceae, a family represented outside the tropics by but one genus, the one to which our meadow beauty belongs. This is one of the most gorgeous of all tropical plants. It bears coral-red flowers, with purple anthers and yellow filaments, in panicles a foot long, and pink bracts that are often as much as 4 inches long.

Miconia magnifica (*Cyanophyllum magnificum*) is another member of the Melastomaceae. This gorgeous plant from Mexico is one of the most magnificent foliage plants known; and the specimen shown here is an unusually fine one.

Stevensonia grandifolia, a rare palm from the Seychelles, is another palm that will not stand the temperature of the Palm House. It is a highly colored palm, with leaves edged and spotted with brilliant red.

The Fern House, looking toward the Palm House.

The Fern House

THIS room contains a landscape suggestive of the carboniferous age. In the center is a lagoon, fed by rills from an artificial spring and a miniature waterfall. The lagoon is surrounded by miniature cliffs and meadows. The rockwork, constructed by a Belgian genius, is of Ohio tufa, an exceedingly porous rock that is well suited to the purpose for which it is used here.

The lagoon is planted only with such aquatics as best contribute to the landscape effect desired. The West Parks' great collection of aquatics is displayed in the lagoons and ponds that make up the naturalist Aquatic Gardens west of the Rose Garden in Humboldt Park; in the two large water basins in Garfield Park; and in the large water basin in Douglas Park. The collection displayed in the gardens and basins includes several hundred water lilies, representing 38 species, and an excellent collection of our native aquatics. The lilies shown include both hardy and tropical water lilies. One section of the Humboldt gardens is devoted to the sacred Lotus of the Orient, and as many as 100 to 200 flowers may be seen in bloom there at one time. The basins in Garfield and Douglas Parks are planted with tropical water lilies, both day and night bloomers. Some of the finest specimens displayed are hybrids that were originated in the West Parks. One of the most interesting specimens displayed is the new water lily developed in the Garfield basins and named August Koch, in honor of its originator. This water lily has the peculiarity of producing new plants on the leaves, at the end of the petiole.

The chief emphasis in the Fern House is on tropical ferns, tree ferns, and fern allies, and on Cycads. The room presents an unsurpassed study in greens, with a bit of color from the water lilies, the water hyacinths, and the few flowering plants grouped along the edge of the lagoon. The tropical vines, planted to hide the columns of the building, grow unusually well in this room.

Several hundred species are shown here. All of them are natives of tropical or subtropical regions. A few ferns, such as the walking fern and one species of maidenhair fern, belong to the same species as the ferns of our local woods; but the specimens shown were collected from tropical woods. Repeated attempts have been made to grow specimens collected locally; but such attempts have always resulted in failure.

Most of the plants in this room are of interest to the layman only as they contribute to the total effect—just as parts of the picture. A few, however, such as the following, are of general interest:

Adiatum, or MAIDENHAIR FERN, a genus that comprises about 100 species, all of which are tropical except the two species found locally. This is generally held to be the loveliest of all ferns. The Conservatory has a collection representing 20 species from all parts of the tropical world.

Alpinia nutans, or SHELL FLOWER, a native of the East Indies, belongs to the Zingiberaceae, the family to which ginger belongs. This is

one of the strongest growing plants in the Conservatory, and is valued both for its foliage and for its fragrant, orchid-like flowers which it bears in spikes of 15 to 20, during May.

Alsophila australis, a native of Australia and Tasmania, is a very choice tree fern. The specimen shown here is very old and has attained its full size.

Ardisia crenulata, is a native of the East Indies or of China, that belong to the *Myrsinaceae*, a family with no local representatives. The plant is a popular one at Christmas time because of its drooping clusters of coral-red berries. It has no place in this house; but came up of its own accord at the edge of the walk, and has been allowed to remain undisturbed.

Asplenium bulbiferum, a fern from Africa and Australia, is peculiar for the tiny bulbets along the edges of certain fronds. New ferns develop from these bulbets while they are still attached to the leaf of the parent plant.

Asplenium Nidus (*A. Nidus-avis*), or BIRD'S NEST FERN, is one of the largest and showiest ferns in the collection, of interest for the peculiar nest-like arrangement of the fronds.

Blechnum orientale, is a tree fern that is here developing a colony about itself as it does in its native home. The young plants are growing from runners, and are often supposed by visitors to be ferns instead of juvenile tree ferns.

Camptosorus rhizophyllus, or WALKING FERN, is an interesting species represented in our local flora. Wherever the tip of a frond touches the ground, it may root and form a new plant, thus taking a step forward.

Ceratopteris pteridoides, is a species representing the only truly aquatic plants among ferns.

Cibotium. This collection contains representatives of three exceedingly rare species of this tree fern. Occasionally florists sell these tree ferns in their juvenile state as ferns.

Cycadaceae, or Cycad family. The cycads are among the oldest known plants. Specimens are found in fossils of the early Mesozoic, and the geological epoch when they were most abundant is sometimes known as the "Age of Cycads." Cycads are an intermediate link between pines and palms. All of them bear a cone-shaped fruit. The cones of many species contain nuts that form an important article of food in their native lands. The leaves are used in many countries to decorate altars and temples. With us their chief use is in funeral designs. There are few collections of cycads in existence. This is a very good collection, comprising specimens representing the genera Bowenia, Ceratozamia, Cycas, Dioon, Macrozamia, Stangeria, and Zamia. Some of the specimens of Dioon shown here are unusually fine. This genus is said to be the closest to the fossil forms of any living representatives of the family. The seeds are the size of Spanish chestnuts, and are eaten by the Mexicans. Two other cycads of especial interest are:

Cycas circinalis. The specimen in this collection is probably the oldest and largest cycad in this country. It is many hundreds of years old. It will be noticed that bulbets that look like tulip bulbs grow along the trunk of the plant—new plants can be grown from these bulbets. This is often known as the fern palm, and grows in India, Ceylon, Sumatra, Java, the Philippines, Madagascar, Guam, and tropical Africa. The nuts are a staple food in time of famine in Guam; but must be soaked in several waters before they can be eaten. They are so poisonous that the water in which they are soaked will kill cattle. After the poison is removed by soaking, they are dried, ground into meal, and made into cakes.

Cycas revoluta, or SAGO PALM, is a native of Java. The leaves of this species are much used in funeral designs. The nuts are eaten in tropical countries. A kind of sago is prepared from the pith of the trunk.

Cyperus alternifolia, or UMBRELLA PALM, is a native of Madagascar that belongs to the Sedge family. It is a most popular florist's plant.

Cyprus sp. (Johann Albrechthohe), a native of southwest Africa, is a species that grows to a greater height in the Conservatory than in its native home.

Cyrtomium, or HOLLY FERN, a native of India and Japan, is one of the most popular ferns for use in fern dishes. Two species are shown here.

Davallia, a genus of ferns from the South Sea Islands, furnishes the fern rhizomes used in making fern balls. The rhizomes are collected by collectors who penetrate the jungles in search of them; and are arranged in all sorts of fancy shapes. With watering these fern balls grow into lovely masses of ferns, needing no other food than that supplied them by air and water.

Dicksonia, a very hardy genus of tree ferns, represented here by 4 species, one of which will stand a little frost.

Eichhornia, or WATER HYACINTH, the "million-dollar weed" that obstructs navigation of the St. John's River in Florida, is a lovely aquatic with a delicate, orchid-like flower.

Eletteria Cardamomum, a native of India, belongs to the Zingiberaceae, or Ginger family. It is cultivated in various tropical lands, and yields the cardamons used in medicine.

Hedychium, or GINGER LILY, also belongs to the Zingiberaceae. This collection includes specimens belonging to 4 species, 3 from Asia and 1 from Madagascar. All bear extremely fragrant flowers. These plants are hardy in the South and have naturalized themselves there in some places.

Hydrocleis nymphoides (Limnocharis Humboldtii), or WATER POPPY, is a lovely aquatic from tropical America. It bears dainty yellow flowers two inches or more across.

Lemna, or DUCKWEED, the smallest of all flowering plants, would cover the water like a scum if not kept confined. Two species are grown in the lagoon.

Linaria Cymbalaria, or KENILWORTH IVY, belongs to the Scrophulariaceae, the family to which our garden snapdragon belongs. This

trailer, which blooms continuously, is used here to clothe portions of the ledges that overhang the lagoon.

Lygodium scandens, is an interesting vine-like fern with twining strings many feet long. It is a native of India and China.

Marsilea, a flowerless aquatic related to the ferns, has leaves that look like four-leaved clovers. Two species are grown in the lagoon.

Marchantia Disguneta, a common liverwort, sometimes sold by nurserymen as a cover for rock gardens, is grown here to supply the requests for it from botany classes.

Myriophyllum proserpinacoides, or PARROT'S FEATHER, a native of Chili, belongs to the same genus as the myriophyllum that is common in our ponds and lakes. This plant is a popular one for use in aquaria.

Nephrolepis exaltata, or SWORD FERN, is of interest as the parent type of many of the commercial ferns of today. This fern was first imported into this country in 1890. Six years later a plant with unusually graceful foliage was found in a collection owned by a man who lived near Boston, and the new form came to be known as Boston fern. From the Boston fern almost innumerable horticultural forms have been developed. This collection includes 24 species and varieties, among them a horticultural variety known as *N. Wittboldii*, developed by a local florist.

Nymphaea, or WATER LILY. The genus is represented here by 5 species. These plants are in bloom continuously from March to January.

Nymphoides indicum (*Limnanthemum indicum*), or FLOATING HEART, or WATER SNOWFLAKE, is a pretty tropical aquatic, in bloom all year.

Platycerium, or STAG-HORN FERN, is a most interesting genus, represented here by 5 species. The plant produces two types of fronds, sterile ones that look like flat disks; and fertile ones that look like antlers. Here the disk fronds clasp the earth closely. In the forests where the ferns are found growing wild, the disk often clasps the trunks or branches of trees.

Polypodium quercifolium, or OAK-LEAVED FERN, is another species that produces two types of fronds—fertile ones that are typical fern fronds, and sterile ones that look like oak leaves.

Philodendron. This tropical climber belongs to the Araceae, or Aeroid family, and is used here to help cover the columns of the room. Several species are represented in this room, some of which are in flower at all seasons of the year. Several species bear fruit of a most spicy fragrance.

Scolopendrium officinarum, or HART'S TONGUE FERN, is an interesting fern that was formerly much used in Europe in fern baskets.

Selaginella, or CLUB MOSS, belongs to the Selaginellaceae, a family that closely resembles the Lycopodiaceae, and that is often confused with it. Both families are commonly known as club moss. The genus is represented here by 13 species, varying in type from the low-growing, moss-like species that is used for lawns throughout the Fern and Palm Houses, to species that resemble ferns of fair size. All the species here shown are natives of tropical regions. The species known as rainbow moss, remarkable for its many-tinted foliage, is probably the species that attracts most comment from visitors.

GRIMM
BOOK BINDERY, INC.
SINCE 1854
5880 GISHOLT DRIVE
MADISON, WISCONSIN 53713
PHONE (608) 221-4443